

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:

[illegible]

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11096

EVENT NAME: Pajarito (TA-54) MY2017 Q2

SAMPLE ID: CAPA-17-129186

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	1/17/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1306		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-49 S1		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		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: Sampled 50 ft. from running dresel generator

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Dissolved Oxygen	4.52	mg/L	Flow (in gpm)	1.68	GPM	Oxidation-Reduction Potential	145.9	mV
pH	7.98	SU	Specific Conductance	151.7	uS/cm	Temperature	24.3	deg C
Turbidity	6.3	NTU						

COLLECTED BY (PRINT): W. Sanchez

RELINQUISHED BY (Printed Name) Allizyn Starnfeld (Signature) <i>[Signature]</i>	Date/Time 1/17/17 1306	RECEIVED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time 1/17/17 1345
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-17-129224

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	1/17/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1306		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-49 S1		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FTB	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): W. Sanchez

RELINQUISHED BY (Printed Name) Allryn Stanfield (Signature) <i>[Signature]</i>	Date/Time 1/17/17 1345	RECEIVED BY <i>[Signature]</i> (Printed Name) S. Sherwood (Signature) <i>[Signature]</i>	Date/Time 1/17/17 1345
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. 2017-873

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
414565	SW-846:8260B	1		1		

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
414565	SW-846:8260B	1633501	1633501	1		1			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-17-129186	414565001	REG	80	3	0	0
SW-846:8260B	VOC	CAPA-17-129224	414565002	FTB	80	3	0	0
SW-846:8260B	VOC	LCS	1203713541	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203713542	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203715100	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203715101	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203713540	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203715099	MB	80	3	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

## DATA VALIDATION REPORT

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?

No.

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?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

**Reason Code**

**Description**

## DATA VALIDATION REPORT

**Reason Code**

### Description

U\_LAB

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-129186	R-49 S1	REG	SW-846:8260B	0	80
CAPA-17-129224	R-49 S1	FTB	SW-846:8260B	0	80



February 03, 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

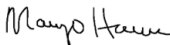
Re: LANL- WQH Water Samples  
Work Order: 414565  
SDG: 2017-873

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on January 19, 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: 2017-873  
Enclosures





**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 414565**  
**SDG: 2017-873**

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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 414565  
SDG # : 2017-873**

**February 03, 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 19, 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>
414565001	CAPA-17-129186
414565002	CAPA-17-129224

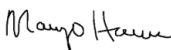
**Case Narrative**

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 03 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 &amp; REVIEW FORM

Client: <u>ESHL</u>			SDG/AR/COC/Work Order: <u>414565</u>		
Received By: <u>ZKw</u>			Date Received: <u>1/19/17</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"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?				<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?				<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?				<input checked="" 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"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?				<input checked="" 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"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" 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"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>ES032015830</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?			<input checked="" type="checkbox"/>	Sample ID's, containers affected and observed pH: <u>All WST15 samples read unpreserved</u> If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?		<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>			(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
9 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			Sample ID's affected:
14 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
16 Carrier and tracking number.				Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other  <u>5900 1781 6445</u>

Comments (Use Continuation Form if needed):

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: 18JAN17  
ACTWGT: 40.0 LB MAN  
CAD: 0014176/CAFE2916

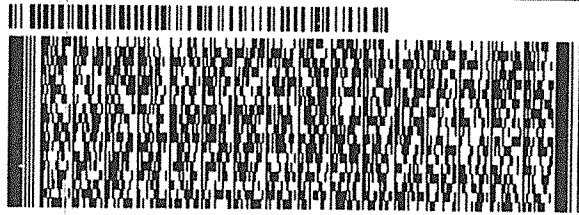
BILL SENDER

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

**CHARLESTON SC 29407**

(843) 666-8171

REF: 6A000ASRGW04BAGWS0



**FedEx**  
Express



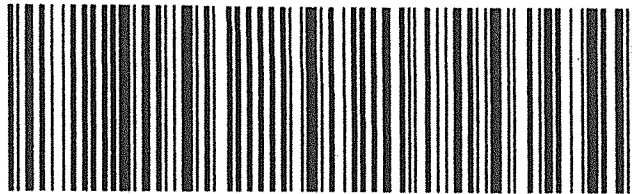
TRK# 5908 1781 6445  
0201

**THU - 19 JAN 10:30A**  
**PRIORITY OVERNIGHT**

**X7 CHSA**

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

Part # 156148V-434 RIT2 06/15



# **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 #: 2017-873  
Work Order #: 414565**

**Method/Analysis Information**

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1633501

**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>
414565001	CAPA-17-129186
414565002	CAPA-17-129224
1203713540	Method Blank (MB)
1203713541	Laboratory Control Sample (LCS)
1203713542	Laboratory Control Sample (LCS)
1203713543	414380001(CAPA-17-129179) Post Spike (PS)
1203713544	414380001(CAPA-17-129179) Post Spike (PS)
1203713545	414380001(CAPA-17-129179) Post Spike Duplicate (PSD)
1203713546	414380001(CAPA-17-129179) Post Spike Duplicate (PSD)
1203715099	Method Blank (MB)
1203715100	Laboratory Control Sample (LCS)
1203715101	Laboratory Control Sample (LCS)

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. 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 spike recoveries met the acceptance limits.

##### **QC Sample Designation**

Sample 414380001 (CAPA-17-129179) 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.

Sample	Analyte	Value
1203713543 (CAPA-17-129179PS)	Several	See applicable report
1203713545 (CAPA-17-129179PSD)	Several	See applicable report

##### **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) 1599391 was generated for samples 1203713543 (CAPA-17-129179PS) and 1203713545 (CAPA-17-129179PSD) 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: 2017-873 GEL Work Order: 414565

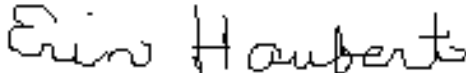
#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- 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: 14 FEB 2017

Title: Data Validator

# **Sample Data Summary**

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/17/2017 13:06</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414565001</b>	<b>Date Received:</b>	<b>01/19/2017 08:50</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-17-129186</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/25/2017 14:41</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/25/2017 14:41</b>				
<b>Data File:</b>	<b>012517V1\1S311.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>2017-873</b>	<b>Date Collected:</b>	<b>01/17/2017 13:06</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414565001</b>	<b>Date Received:</b>	<b>01/19/2017 08:50</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-17-129186</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/25/2017 14:41</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/25/2017 14:41</b>				
<b>Data File:</b>	<b>012517V1\1S311.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> 2017-873	<b>Date Collected:</b> 01/17/2017 13:06	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414565001	<b>Date Received:</b> 01/19/2017 08:50	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129186	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/25/2017 14:41	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/25/2017 14:41		
<b>Data File:</b> 012517V1\1S311.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	50.0	50.0	ug/L 100	(71%-134%)
Bromofluorobenzene	50.8	50.0	ug/L 102	(70%-131%)
Toluene-d8	46.3	50.0	ug/L 93	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	10.309	61.5	ug/L	0	J
	unknown siloxane	14.549	15.8	ug/L	0	J
	unknown	19.021	8.18	ug/L	0	J

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/17/2017 13:06</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414565002</b>	<b>Date Received:</b>	<b>01/19/2017 08:50</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-17-129224</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/25/2017 15:10</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/25/2017 15:10</b>				
<b>Data File:</b>	<b>012517V1\1S312.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>2017-873</b>	<b>Date Collected:</b>	<b>01/17/2017 13:06</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414565002</b>	<b>Date Received:</b>	<b>01/19/2017 08:50</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-17-129224</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/25/2017 15:10</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/25/2017 15:10</b>				
<b>Data File:</b>	<b>012517V1\1S312.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> 2017-873	<b>Date Collected:</b> 01/17/2017 13:06	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414565002	<b>Date Received:</b> 01/19/2017 08:50	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129224	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/25/2017 15:10	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/25/2017 15:10		
<b>Data File:</b> 012517V1\1S312.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	51.8	50.0	ug/L 104	(71%-134%)
Bromofluorobenzene	50.5	50.0	ug/L 101	(70%-131%)
Toluene-d8	46.2	50.0	ug/L 92	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	8.259	53.2	ug/L	0	J
	unknown siloxane	14.558	11.5	ug/L	0	J
	unknown	19.021	8.6	ug/L	0	J

# **Quality Control Summary**

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

Page 1 of 1

**SDG Number: 2017-873****Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203713541	LCS for batch 1633501	97	90	100
1203713542	LCS for batch 1633501	99	93	100
1203713540	MB for batch 1633501	101	96	108
1203713543	CAPA-17-129179PS	101	91	98
1203713545	CAPA-17-129179PSD	99	91	98
1203713544	CAPA-17-129179PS	98	92	96
1203713546	CAPA-17-129179PSD	99	93	98
1203715100	LCS for batch 1633501	98	92	97
1203715101	LCS for batch 1633501	97	91	97
1203715099	MB for batch 1633501	99	94	102
414565001	CAPA-17-129186	100	93	102
414565002	CAPA-17-129224	104	92	101

**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: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203713541

Instrument: VOA1.I

Analysis Date: 01/23/2017 21:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	87.8	88	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1090	87	61-125
67-64-1	LCS Acetone	250	0.0	193	77	48-157
74-88-4	LCS Iodomethane	250	0.0	256	103	72-128
75-15-0	LCS Carbon disulfide	250	0.0	215	86	69-138
108-05-4	LCS Vinyl acetate	250	0.0	252	101	67-125
78-93-3	LCS 2-Butanone	250	0.0	196	78	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	202	81	66-124
591-78-6	LCS 2-Hexanone	250	0.0	185	74	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	57.3	115	40-160
74-87-3	LCS Chloromethane	50.0	0.0	45.1	90	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	46.5	93	65-137
74-83-9	LCS Bromomethane	50.0	0.0	57.5	115	63-137
75-00-3	LCS Chloroethane	50.0	0.0	48.2	96	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	57.8	116	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	49.6	99	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	43.7	87	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	44.6	89	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	46.9	94	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	46.5	93	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	47.9	96	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	49.3	99	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203713541

Instrument: VOA1.I

Analysis Date: 01/23/2017 21:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	47.5	95	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	53.3	107	76-125
67-66-3	LCS Chloroform	50.0	0.0	52.0	104	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	51.2	102	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	45.9	92	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	55.2	110	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	54.2	108	74-122
71-43-2	LCS Benzene	50.0	0.0	45.2	90	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	49.5	99	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	46.4	93	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	52.6	105	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	55.9	112	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	49.8	100	78-131
108-88-3	LCS Toluene	50.0	0.0	42.8	86	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	49.2	98	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	45.5	91	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	45.4	91	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	46.2	92	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	55.9	112	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	49.5	99	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	45.8	92	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	43.9	88	73-125

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203713541

Instrument: VOA1.I

Analysis Date: 01/23/2017 21:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	44.6	89	74-126
100-42-5	LCS Styrene	50.0	0.0	45.8	92	72-130
75-25-2	LCS Bromoform	50.0	0.0	55.1	110	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	41.8	84	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	41.9	84	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	47.9	96	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.6	91	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	39.9	80	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	42.2	84	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	43.9	88	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	42.2	84	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	43.8	88	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	43.5	87	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	41.4	83	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	42.7	85	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	44.2	88	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	41.3	83	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	52.0	104	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	46.7	93	72-136
91-20-3	LCS Naphthalene	50.0	0.0	49.5	99	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	49.6	99	70-130

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203713541

Instrument: VOA1.I

Analysis Date: 01/23/2017 21:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	47.5	95	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.8	106	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.1	90	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4940	99	63-138



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203713542

Instrument: VOA1.I

Analysis Date: 01/23/2017 22:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	168	67	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	257	103	61-148
107-05-1	LCS Allyl chloride	250	0.0	216	86	59-125
107-13-1	LCS Acrylonitrile	250	0.0	220	88	65-122
107-12-0	LCS Propionitrile	250	0.0	217	87	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	217	87	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	222	89	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	203	81	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2470	99	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	47.6	95	66-147

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike

Client ID: CAPA-17-129179PS

Matrix: W

Lab Sample ID 1203713543

Instrument: VOA1.I

Analysis Date: 01/24/2017 02:51

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	60.7	61	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1080	86	56-131
67-64-1	PS Acetone	250	0.00 U	103	41	25-155
74-88-4	PS Iodomethane	250	0.00 U	249	100	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	193	77	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	227	91	48-133
78-93-3	PS 2-Butanone	250	0.00 U	136	54	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	205	82	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	150	60	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	55.9	112	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	44.0	88	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	42.7	85	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	54.5	109	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	42.8	86	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	55.6	111	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	47.3	95	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	40.7	81	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	42.7	85	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	43.9	88	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	42.8	86	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	45.4	91	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	46.1	92	69-127

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike

Client ID: CAPA-17-129179PS

Matrix: W

Lab Sample ID 1203713543

Instrument: VOA1.I

Analysis Date: 01/24/2017 02:51

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	44.1	88	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	51.5	103	71-130
67-66-3	PS Chloroform	50.0	0.00 U	51.7	103	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	49.0	98	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	40.0	80	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	52.5	105	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	56.5	113	69-130
71-43-2	PS Benzene	50.0	0.00 U	40.9	82	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	42.5	85	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	42.7	85	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	52.0	104	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	54.6	109	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	44.5	89	70-134
108-88-3	PS Toluene	50.0	0.00 U	34.9	70	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	44.0	88	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	42.7	85	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	42.7	85	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	33.6	67	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	53.3	107	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	45.2	90	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	35.0	70	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	31.5	63	61-130

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike

Client ID: CAPA-17-129179PS

Matrix: W

Lab Sample ID 1203713543

Instrument: VOA1.I

Analysis Date: 01/24/2017 02:51

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	32.2	64	62-131
100-42-5	PS Styrene	50.0	0.00 U	33.8	68	59-135
75-25-2	PS Bromoform	50.0	0.00 U	52.9	106	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	27.5	55	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	40.2	80	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	46.7	93	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	34.6	69	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	23.7	47 *	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	26.9	54	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	28.8	58	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	27.4	55	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	25.7	51 *	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	27.4	55	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	23.1	46 *	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	22.8	46 *	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	29.3	59	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	29.1	58	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	19.9	40 *	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	48.7	97	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	19.8	40	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	39.4	79	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	32.8	66	52-135

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike

Client ID: CAPA-17-129179PS

Matrix: W

Lab Sample ID 1203713543

Instrument: VOA1.I

Analysis Date: 01/24/2017 02:51

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	29.5	59	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	46.4	93	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	32.2	64	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	4980	100	60-140

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129179PSD

Matrix: W

Lab Sample ID 1203713545

Instrument: VOA1.I

Analysis Date: 01/24/2017 03:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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 58.5	59	59-132	4	0-20
75-05-8	PSD Acetonitrile	1250	0.00	U 1040	83	56-131	4	0-20
67-64-1	PSD Acetone	250	0.00	U 97.0	39	25-155	6	0-20
74-88-4	PSD Iodomethane	250	0.00	U 238	95	66-133	4	0-20
75-15-0	PSD Carbon disulfide	250	0.00	U 186	74	61-141	4	0-20
108-05-4	PSD Vinyl acetate	250	0.00	U 223	89	48-133	2	0-20
78-93-3	PSD 2-Butanone	250	0.00	U 130	52	25-143	4	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00	U 197	79	61-127	4	0-20
591-78-6	PSD 2-Hexanone	250	0.00	U 146	58	33-138	3	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00	U 54.9	110	33-164	2	0-20
74-87-3	PSD Chloromethane	50.0	0.00	U 44.4	89	53-139	1	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00	U 42.7	85	58-140	0	0-20
74-83-9	PSD Bromomethane	50.0	0.00	U 54.5	109	59-146	0	0-20
75-00-3	PSD Chloroethane	50.0	0.00	U 43.6	87	65-129	2	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00	U 54.4	109	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00	U 47.5	95	69-127	0	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00	U 39.0	78	59-130	4	0-20
75-09-2	PSD Methylene chloride	50.0	0.00	U 40.9	82	62-123	4	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00	U 42.9	86	69-132	2	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00	U 41.2	82	65-127	4	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00	U 43.7	87	67-127	4	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00	U 44.9	90	69-127	3	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129179PSD

Matrix: W

Lab Sample ID 1203713545

Instrument: VOA1.I

Analysis Date: 01/24/2017 03:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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 42.4	85	66-137	4	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00	U 49.0	98	71-130	5	0-20
67-66-3	PSD Chloroform	50.0	0.00	U 49.3	99	71-129	5	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00	U 46.7	93	69-139	5	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00	U 38.2	76	67-130	5	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00	U 49.8	100	66-143	5	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00	U 53.6	107	69-130	5	0-20
71-43-2	PSD Benzene	50.0	0.00	U 39.5	79	66-125	4	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00	U 40.8	82	65-131	4	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00	U 41.3	83	67-127	3	0-20
74-95-3	PSD Dibromomethane	50.0	0.00	U 50.1	100	72-129	4	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00	U 51.5	103	70-138	6	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00	U 42.3	85	70-134	5	0-20
108-88-3	PSD Toluene	50.0	0.00	U 34.2	68	60-126	2	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00	U 43.0	86	69-135	2	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00	U 41.2	82	66-125	3	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00	U 42.0	84	67-124	2	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00	U 32.8	66	60-130	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00	U 51.4	103	68-143	4	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00	U 44.0	88	71-127	3	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00	U 34.2	68	64-124	2	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00	U 30.3	61	61-130	4	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-873

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129179PSD

Matrix: W

Lab Sample ID 1203713545

Instrument: VOA1.I

Analysis Date: 01/24/2017 03:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	31.2	62	62-131	3	0-20
100-42-5	PSD Styrene	50.0	0.00 U	32.6	65	59-135	4	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	50.2	100	64-138	5	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	25.8	52 *	55-133	6	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	38.4	77	62-129	4	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	44.9	90	70-124	4	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	32.6	65	62-124	6	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	21.9	44 *	50-133	8	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	25.0	50 *	53-135	7	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	27.0	54 *	56-128	6	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	25.4	51 *	53-130	8	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	24.7	49 *	55-135	4	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	25.6	51 *	53-132	7	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	21.7	43 *	50-138	6	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	21.1	42 *	49-138	8	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	27.5	55 *	56-126	6	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	27.6	55	55-125	6	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	18.2	36 *	43-142	9	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	47.2	94	62-141	3	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	18.2	36 *	40-147	8	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	37.8	76	62-134	4	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	31.2	62	52-135	5	0-20



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-873

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129179PSD

Matrix: W

Lab Sample ID 1203713545

Instrument: VOA1.I

Analysis Date: 01/24/2017 03:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	27.9	56	50-133	5	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	44.6	89	71-133	4	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	30.4	61	60-125	6	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4790	96	60-140	4	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-873

Sample Type: Post Spike

Client ID: CAPA-17-129179PS

Matrix: W

Lab Sample ID 1203713544

Instrument: VOA1.I

Analysis Date: 01/24/2017 03:48

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	158	63	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	244	97	57-149
107-05-1	PS Allyl chloride	250	0.00 U	205	82	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	213	85	59-129
107-12-0	PS Propionitrile	250	0.00 U	209	84	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	214	86	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	213	85	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	198	79	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2510	100	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	44.6	89	63-146

## Volatile

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Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-873

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129179PSD

Matrix: W

Lab Sample ID 1203713546

Instrument: VOA1.I

Analysis Date: 01/24/2017 04:17

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	162	65	49-141	2	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	249	99	57-149	2	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	210	84	54-128	2	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	225	90	59-129	5	0-20
107-12-0	PSD Propionitrile	250	0.00 U	226	90	58-131	8	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	225	90	59-134	5	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	228	91	62-135	7	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	210	84	60-136	6	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2650	106	60-143	5	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	46.2	92	63-146	4	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203715100

Instrument: VOA1.I

Analysis Date: 01/25/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	90.7	91	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1060	85	61-125
67-64-1	LCS Acetone	250	0.0	265	106	48-157
74-88-4	LCS Iodomethane	250	0.0	248	99	72-128
75-15-0	LCS Carbon disulfide	250	0.0	213	85	69-138
108-05-4	LCS Vinyl acetate	250	0.0	254	102	67-125
78-93-3	LCS 2-Butanone	250	0.0	253	101	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	216	86	66-124
591-78-6	LCS 2-Hexanone	250	0.0	243	97	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	60.5	121	40-160
74-87-3	LCS Chloromethane	50.0	0.0	45.3	91	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	48.1	96	65-137
74-83-9	LCS Bromomethane	50.0	0.0	58.6	117	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	63.4	127	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	48.9	98	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	44.6	89	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	42.8	86	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	44.1	88	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	46.4	93	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	46.7	93	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	47.8	96	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203715100

Instrument: VOA1.I

Analysis Date: 01/25/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	50.5	101	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	50.1	100	76-125
67-66-3	LCS Chloroform	50.0	0.0	51.0	102	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	52.7	105	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	47.1	94	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	57.4	115	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	51.9	104	74-122
71-43-2	LCS Benzene	50.0	0.0	44.5	89	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	49.1	98	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	44.4	89	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	50.1	100	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	53.6	107	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	47.6	95	78-131
108-88-3	LCS Toluene	50.0	0.0	42.7	85	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.6	97	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	43.7	87	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	44.3	89	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	48.8	98	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	55.0	110	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	48.3	97	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	45.9	92	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	44.8	90	73-125

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203715100

Instrument: VOA1.I

Analysis Date: 01/25/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	44.9	90	74-126
100-42-5	LCS Styrene	50.0	0.0	45.6	91	72-130
75-25-2	LCS Bromoform	50.0	0.0	53.5	107	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	42.6	85	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	41.8	84	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	47.9	96	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.0	90	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	40.9	82	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	43.5	87	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	44.5	89	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	42.8	86	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	45.1	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	43.7	87	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	44.5	89	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	44.7	89	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	45.3	91	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	44.2	88	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	51.9	104	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	50.8	102	72-136
91-20-3	LCS Naphthalene	50.0	0.0	49.1	98	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	51.0	102	70-130

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203715100

Instrument: VOA1.I

Analysis Date: 01/25/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	50.0	100	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.3	105	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.4	91	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4960	99	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-873

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1633501

Matrix: WATER

Lab Sample ID 1203715101

Instrument: VOA1.I

Analysis Date: 01/25/2017 11:47

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1633501

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	243	97	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	250	100	61-148
107-05-1	LCS Allyl chloride	250	0.0	204	82	59-125
107-13-1	LCS Acrylonitrile	250	0.0	219	88	65-122
107-12-0	LCS Propionitrile	250	0.0	217	87	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	211	84	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	216	86	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	199	80	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2580	103	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	45.3	91	66-147



## Method Blank Summary

Page 1 of 1

SDG Number:	2017-873	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1633501	Instrument ID:	VOA1.I	Data File:	012317V1\1S131ba.D
Lab Sample ID:	1203713540	Prep Date:	01/23/2017 22:33	Analyzed:	01/23/17 22:33
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 1633501	1203713541	012317V1\1S128la.D	01/23/17	2107
02 LCS for batch 1633501	1203713542	012317V1\1S130la.D	01/23/17	2204
03 CAPA-17-129179PS	1203713543	012317V1\1S140.D	01/24/17	0251
04 CAPA-17-129179PSD	1203713545	012317V1\1S141.D	01/24/17	0319
05 CAPA-17-129179PS	1203713544	012317V1\1S142.D	01/24/17	0348
06 CAPA-17-129179PSD	1203713546	012317V1\1S143.D	01/24/17	0417

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-873	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1633501	Instrument ID:	VOA1.I	Data File:	012517V1\1S306BA.D
Lab Sample ID:	1203715099	Prep Date:	01/25/2017 12:16	Analyzed:	01/25/17 12:16
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
08 LCS for batch 1633501	1203715100	012517V1\1S303LA.D	01/25/17	1050
09 LCS for batch 1633501	1203715101	012517V1\1S305LW.D	01/25/17	1147
10 CAPA-17-129186	414565001	012517V1\1S311.D	01/25/17	1441
11 CAPA-17-129224	414565002	012517V1\1S312.D	01/25/17	1510

# Quality Control Data

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

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SDG Number: 2017-873

Matrix: WATER

Lab Sample ID: 1203713540

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: MB for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/23/2017 22:33

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/23/2017 22:33

Column: DB-624

Data File: 012317V1\1S131ba.D

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: 2017-873

Matrix: WATER

Lab Sample ID: 1203713540

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: MB for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/23/2017 22:33

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/23/2017 22:33

Data File: 012317V1\1S131ba.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**

Page 3 of 3

<b>SDG Number:</b> 2017-873	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203713540	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004
<b>Client ID:</b> MB for batch 1633501	<b>Method:</b> SW-846:8260B
<b>Batch ID:</b> 1633501	<b>Project:</b> QC
<b>Run Date:</b> 01/23/2017 22:33	<b>SOP Ref:</b> GL-OA-E-038
<b>Prep Date:</b> 01/23/2017 22:33	<b>Dilution:</b> 1
<b>Data File:</b> 012317V1\1S131ba.D	<b>Purge Vol:</b> 5 mL
	<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	50.5	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	53.9	50.0	ug/L 108	(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
No Tentatively Identified Compounds Found				ug/L		

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

SDG Number: 2017-873

Lab Sample ID: 1203713541

Client Sample: QC for batch 1633501

Client ID: LCS for batch 1633501

Batch ID: 1633501

Run Date: 01/23/2017 21:07

Prep Date: 01/23/2017 21:07

Data File: 012317V1\1S128la.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		52.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		51.2	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		45.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		47.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		45.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.6	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		47.9	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		43.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.1	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		54.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		46.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		45.4	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		47.5	ug/L	0.300	1.00
78-93-3	2-Butanone		196	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		43.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		185	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		42.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		42.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		202	ug/L	1.50	5.00
67-64-1	Acetone		193	ug/L	1.50	10.0
75-05-8	Acetonitrile		1090	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		45.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		55.9	ug/L	0.300	1.00
75-25-2	Bromoform		55.1	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-873

Lab Sample ID: 1203713541

Client Sample: QC for batch 1633501

Client ID: LCS for batch 1633501

Batch ID: 1633501

Run Date: 01/23/2017 21:07

Prep Date: 01/23/2017 21:07

Data File: 012317V1\1S128la.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		57.5	ug/L	0.300	1.00
75-15-0	Carbon disulfide		215	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		55.2	ug/L	0.300	1.00
108-90-7	Chlorobenzene		45.8	ug/L	0.300	1.00
75-00-3	Chloroethane		48.2	ug/L	0.300	1.00
67-66-3	Chloroform		52.0	ug/L	0.300	1.00
74-87-3	Chloromethane		45.1	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		55.9	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.6	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		57.3	ug/L	0.300	1.00
60-29-7	Ethyl ether		49.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		43.9	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		46.7	ug/L	0.300	1.00
74-88-4	Iodomethane		256	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		41.8	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		44.6	ug/L	1.00	10.0
91-20-3	Naphthalene		49.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		46.2	ug/L	0.300	1.00
108-88-3	Toluene		42.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.5	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		252	ug/L	1.50	5.00
75-01-4	Vinyl chloride		46.5	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		49.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		87.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4940	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		39.9	ug/L	0.300	1.00
95-47-6	o-Xylene		44.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		41.4	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b> 2017-873		<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203713541		
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> LCS for batch 1633501	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/23/2017 21:07	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/23/2017 21:07		
<b>Data File:</b> 012317V1\1S128la.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		46.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		43.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		46.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		49.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.5	50.0	97	(71%-134%)
Bromofluorobenzene	50.0	50.0	100	(70%-131%)
Toluene-d8	45.2	50.0	90	(74%-124%)

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

Page 1 of 3

SDG Number: 2017-873

Lab Sample ID: 1203713542

Client Sample: QC for batch 1633501

Client ID: LCS for batch 1633501

Batch ID: 1633501

Run Date: 01/23/2017 22:04

Prep Date: 01/23/2017 22:04

Data File: 012317V1\1S130la.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		47.6	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		168	ug/L	1.50	5.00
107-13-1	Acrylonitrile		220	ug/L	1.50	5.00
107-05-1	Allyl chloride		216	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: 2017-873

Matrix: WATER

Lab Sample ID: 1203713542

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: LCS for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/23/2017 22:04

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/23/2017 22:04

Data File: 012317V1\1S1301a.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		203	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		2470	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		217	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		222	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		217	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		257	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

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Sample Summary**

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<b>SDG Number:</b>	2017-873	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203713542		
<b>Client Sample:</b>	QC for batch 1633501	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1633501	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1633501	<b>Inst:</b>	VOA1.I
<b>Run Date:</b>	01/23/2017 22:04	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	01/23/2017 22:04	<b>Purge Vol:</b>	5 mL
<b>Data File:</b>	012317V1\1S1301a.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	49.4	50.0	99	(71%-134%)
Bromofluorobenzene	49.9	50.0	100	(70%-131%)
Toluene-d8	46.5	50.0	93	(74%-124%)

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

<b>SDG Number:</b> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713543	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 02:51	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 02:51		
<b>Data File:</b> 012317V1\1S140.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		46.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		49.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		40.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		45.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		40.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		40.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		32.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		46.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		29.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		27.4	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		48.7	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		45.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		32.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		56.5	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		26.9	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		29.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.7	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		29.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		44.1	ug/L	0.300	1.00
78-93-3	2-Butanone		136	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		28.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		150	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		27.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		22.8	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		205	ug/L	1.50	5.00
67-64-1	Acetone		103	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		40.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		34.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		54.6	ug/L	0.300	1.00
75-25-2	Bromoform		52.9	ug/L	0.300	1.00

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Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/12/2017 10:53</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203713543</b>	<b>Date Received:</b>	<b>01/14/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1633501</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129179PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/24/2017 02:51</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/24/2017 02:51</b>				
<b>Data File:</b>	<b>012317V1\1S140.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		54.5	ug/L	0.300	1.00
75-15-0	Carbon disulfide		193	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		52.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		35.0	ug/L	0.300	1.00
75-00-3	Chloroethane		42.8	ug/L	0.300	1.00
67-66-3	Chloroform		51.7	ug/L	0.300	1.00
74-87-3	Chloromethane		44.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		53.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.0	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		55.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		31.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		19.8	ug/L	0.300	1.00
74-88-4	Iodomethane		249	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		27.5	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		42.7	ug/L	1.00	10.0
91-20-3	Naphthalene		39.4	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		33.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		33.6	ug/L	0.300	1.00
108-88-3	Toluene		34.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		42.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		55.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		227	ug/L	1.50	5.00
75-01-4	Vinyl chloride		42.7	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		46.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		44.5	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		60.7	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4980	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		19.9	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		23.7	ug/L	0.300	1.00
95-47-6	o-Xylene		32.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		23.1	ug/L	0.300	1.00

**Volatile  
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Sample Summary**

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<b>SDG Number:</b> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713543	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 02:51	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 02:51		
<b>Data File:</b> 012317V1\1S140.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		43.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		25.7	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		42.8	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		44.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.3	50.0	101	(71%-134%)
Bromofluorobenzene	49.2	50.0	98	(70%-131%)
Toluene-d8	45.6	50.0	91	(74%-124%)

**Volatile**  
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**Sample Summary**

<b>SDG Number:</b> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713544	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 03:48	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 03:48		
<b>Data File:</b> 012317V1\1S142.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		44.6	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		158	ug/L	1.50	5.00
107-13-1	Acrylonitrile		213	ug/L	1.50	5.00
107-05-1	Allyl chloride		205	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



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Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/12/2017 10:53</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203713544</b>	<b>Date Received:</b>	<b>01/14/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1633501</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129179PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/24/2017 03:48</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/24/2017 03:48</b>				
<b>Data File:</b>	<b>012317V1\1S142.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		198	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		2510	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		214	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		213	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		209	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		244	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> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713544	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 03:48	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 03:48		
<b>Data File:</b> 012317V1\1S142.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	48.9	50.0	98	(71%-134%)
Bromofluorobenzene	47.8	50.0	96	(70%-131%)
Toluene-d8	45.9	50.0	92	(74%-124%)

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/12/2017 10:53</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203713545</b>	<b>Date Received:</b>	<b>01/14/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1633501</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129179PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/24/2017 03:19</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/24/2017 03:19</b>				
<b>Data File:</b>	<b>012317V1\1S141.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		44.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		38.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		41.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		39.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		38.2	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		31.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		44.9	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		27.9	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		25.6	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		47.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		44.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		30.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		53.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		41.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		25.0	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		27.5	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		27.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		42.4	ug/L	0.300	1.00
78-93-3	2-Butanone		130	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		27.0	ug/L	0.300	1.00
591-78-6	2-Hexanone		146	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		25.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		21.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		197	ug/L	1.50	5.00
67-64-1	Acetone		97.0	ug/L	1.50	10.0
75-05-8	Acetonitrile		1040	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		32.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		49.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.5	ug/L	0.300	1.00
75-25-2	Bromoform		50.2	ug/L	0.300	1.00

**Volatile  
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Sample Summary**

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/12/2017 10:53</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203713545</b>	<b>Date Received:</b>	<b>01/14/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1633501</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129179PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/24/2017 03:19</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/24/2017 03:19</b>				
<b>Data File:</b>	<b>012317V1\1S141.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		54.5	ug/L	0.300	1.00
75-15-0	Carbon disulfide		186	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		49.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		34.2	ug/L	0.300	1.00
75-00-3	Chloroethane		43.6	ug/L	0.300	1.00
67-66-3	Chloroform		49.3	ug/L	0.300	1.00
74-87-3	Chloromethane		44.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		54.9	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		30.3	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		18.2	ug/L	0.300	1.00
74-88-4	Iodomethane		238	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		25.8	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		40.9	ug/L	1.00	10.0
91-20-3	Naphthalene		37.8	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		32.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		32.8	ug/L	0.300	1.00
108-88-3	Toluene		34.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		40.8	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		54.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		223	ug/L	1.50	5.00
75-01-4	Vinyl chloride		42.7	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		44.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		58.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4790	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		18.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		21.9	ug/L	0.300	1.00
95-47-6	o-Xylene		31.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		21.7	ug/L	0.300	1.00

**Volatile  
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Sample Summary**

<b>SDG Number:</b> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713545	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 03:19	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 03:19		
<b>Data File:</b> 012317V1\1S141.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		42.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		24.7	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		41.2	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		43.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.7	50.0	99	(71%-134%)
Bromofluorobenzene	48.8	50.0	98	(70%-131%)
Toluene-d8	45.6	50.0	91	(74%-124%)

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

<b>SDG Number:</b> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713546	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 04:17	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 04:17		
<b>Data File:</b> 012317V1\1S143.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		46.2	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		162	ug/L	1.50	5.00
107-13-1	Acrylonitrile		225	ug/L	1.50	5.00
107-05-1	Allyl chloride		210	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> 2017-873	<b>Date Collected:</b> 01/12/2017 10:53	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203713546	<b>Date Received:</b> 01/14/2017 09:00	
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129179PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/24/2017 04:17	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/24/2017 04:17		
<b>Data File:</b> 012317V1\1S143.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		210	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		2650	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		225	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		228	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		226	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		249	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**

Page 3 of 3

<b>SDG Number:</b>	<b>2017-873</b>	<b>Date Collected:</b>	<b>01/12/2017 10:53</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203713546</b>	<b>Date Received:</b>	<b>01/14/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1633501</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129179PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1633501</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/24/2017 04:17</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/24/2017 04:17</b>				
<b>Data File:</b>	<b>012317V1\1S143.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	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	49.7	50.0	99	(71%-134%)
Bromofluorobenzene	48.8	50.0	98	(70%-131%)
Toluene-d8	46.3	50.0	93	(74%-124%)



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

Page 1 of 3

SDG Number: 2017-873

Lab Sample ID: 1203715099

Client Sample: QC for batch 1633501

Client ID: MB for batch 1633501

Batch ID: 1633501

Run Date: 01/25/2017 12:16

Prep Date: 01/25/2017 12:16

Data File: 012517V1\1S306BA.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: 2017-873

Matrix: WATER

Lab Sample ID: 1203715099

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: MB for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/25/2017 12:16

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/25/2017 12:16

Data File: 012517V1\1S306BA.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**

<b>SDG Number:</b> 2017-873		<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203715099		
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1633501	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/25/2017 12:16	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/25/2017 12:16		
<b>Data File:</b> 012517V1\1S306BA.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	49.5	50.0	ug/L 99	(71%-134%)
Bromofluorobenzene	50.9	50.0	ug/L 102	(70%-131%)
Toluene-d8	46.9	50.0	ug/L 94	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	7.984	111	ug/L	0	J
000100-44-7	Benzyl chloride	18.506	22.9	ug/L	91	NJ

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-873

Lab Sample ID: 1203715100

Client Sample: QC for batch 1633501

Client ID: LCS for batch 1633501

Batch ID: 1633501

Run Date: 01/25/2017 10:50

Prep Date: 01/25/2017 10:50

Data File: 012517V1\1S303LA.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		52.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		52.7	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		43.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		46.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		44.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		47.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		47.9	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		50.0	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		51.9	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		48.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		51.9	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		44.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		43.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.7	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.5	ug/L	0.300	1.00
78-93-3	2-Butanone		253	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		44.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		243	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		42.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		44.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		216	ug/L	1.50	5.00
67-64-1	Acetone		265	ug/L	1.50	10.0
75-05-8	Acetonitrile		1060	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		44.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.1	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		53.6	ug/L	0.300	1.00
75-25-2	Bromoform		53.5	ug/L	0.300	1.00

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

SDG Number: 2017-873

Lab Sample ID: 1203715100

Client Sample: QC for batch 1633501

Client ID: LCS for batch 1633501

Batch ID: 1633501

Run Date: 01/25/2017 10:50

Prep Date: 01/25/2017 10:50

Data File: 012517V1\1S303LA.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		58.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		213	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		57.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		45.9	ug/L	0.300	1.00
75-00-3	Chloroethane		50.3	ug/L	0.300	1.00
67-66-3	Chloroform		51.0	ug/L	0.300	1.00
74-87-3	Chloromethane		45.3	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		55.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		60.5	ug/L	0.300	1.00
60-29-7	Ethyl ether		48.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		44.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.8	ug/L	0.300	1.00
74-88-4	Iodomethane		248	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		42.6	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		42.8	ug/L	1.00	10.0
91-20-3	Naphthalene		49.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.8	ug/L	0.300	1.00
108-88-3	Toluene		42.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		63.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		254	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.1	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		47.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		47.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		90.7	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4960	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		44.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		40.9	ug/L	0.300	1.00
95-47-6	o-Xylene		44.9	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		43.7	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b>	2017-873	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203715100		
<b>Client Sample:</b>	QC for batch 1633501	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1633501	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1633501	<b>Inst:</b>	VOA1.I
<b>Run Date:</b>	01/25/2017 10:50	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	01/25/2017 10:50		
<b>Data File:</b>	012517V1\1S303LA.D	<b>Column:</b>	DB-624
		<b>Project:</b>	QC
		<b>SOP Ref:</b>	GL-OA-E-038
		<b>Dilution:</b>	1
		<b>Purge Vol:</b>	5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		44.1	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		45.1	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		46.4	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.6	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.2	50.0	98	(71%-134%)
Bromofluorobenzene	48.7	50.0	97	(70%-131%)
Toluene-d8	46.1	50.0	92	(74%-124%)

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

SDG Number: 2017-873

Matrix: WATER

Lab Sample ID: 1203715101

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: LCS for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/25/2017 11:47

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/25/2017 11:47

Data File: 012517V1\1S305LW.D

Column: 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		45.3	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		243	ug/L	1.50	5.00
107-13-1	Acrylonitrile		219	ug/L	1.50	5.00
107-05-1	Allyl chloride		204	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: 2017-873

Matrix: WATER

Lab Sample ID: 1203715101

Client Sample: QC for batch 1633501

Client: ARSL004

Project: QC

Client ID: LCS for batch 1633501

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1633501

Inst: VOA1.I

Dilution: 1

Run Date: 01/25/2017 11:47

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/25/2017 11:47

Data File: 012517V1\1S305LW.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		199	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		2580	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		211	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		216	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		217	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		250	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**

Page 3 of 3

<b>SDG Number:</b> 2017-873		<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203715101		
<b>Client Sample:</b> QC for batch 1633501	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> LCS for batch 1633501	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1633501	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/25/2017 11:47	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/25/2017 11:47		
<b>Data File:</b> 012517V1\1S305LW.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	48.5	50.0	97	(71%-134%)
Bromofluorobenzene	48.4	50.0	97	(70%-131%)
Toluene-d8	45.6	50.0	91	(74%-124%)

# Miscellaneous

DATA EXCEPTION REPORT			
<b>Mo.Day Yr.</b> 26-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> 1633501	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 414379(2017-857),414380(2017-854),414563(2017-874),414565(2017-873),414566(2017-872)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Failed Recovery for MS/MSD, or PS/PSD: QC   1203713543PS,1203713545PSD		1. The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. 1203713543 (CAPA-17-129179PS) Several [See applicable report]. 1203713545 (CAPA-17-129179PSD) Several [See applicable report].	

**Originator's Name:**

Vanny Yib                      26-JAN-17

**Data Validator/Group Leader:**

Erin Haubert                      03-FEB-17