

The order of this data package is as follows:

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

Comments:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAPA-17-139151

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|----------------------|
| Date Collected (MM/DD/YYYY): | 07/11/2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 1140 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | GSP | |
| LOCATION ID: | R-57 S1 | | FIELD PREP: | UF | |
| LOCATION TYPE: | man | | FIELD QC TYPE: | REG | |
| TOP DEPTH: | NA | | SAMPLE USAGE: | INV | |
| BOTTOM DEPTH: | NA | ↓ | EXCAVATED: | | YES / NO / <u>NA</u> |

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

SAMPLE COMMENTS: generator Running at about 50' away.

LOCATION COMMENTS: none

FIELD PARAMETERS:

| | | | | | | |
|----------------------------------|----------|-------|------------------|-----------|-------------------------|-------------|
| Sample Time | 1140 | HH:MM | Dissolved Oxygen | 5.58 mg/L | Flow (in gpm) | 3.61 gpm |
| Oxidation-Reduction Potential | 167.0 mV | | pH | 8.05 | Specific Conductance | 139.7 us/cm |
| Temperature | 23.6 °C | | Turbidity | 0.53 NTU | | |

COLLECTED BY (PRINT): DiSaramillo, K. Tow

| | | | |
|--|------------------------------|--|------------------------------|
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time 7/11/17 1245 | RECEIVED BY (Printed Name) (Signature) | Date/Time 7/11/17 1245 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 07/06/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11313

EVENT NAME: Pajarito (TA-54) MY2017 Q4

SAMPLE ID: CAPA-17-139164

WORK ORDER:

| | AS PLANNED | AS COLLECTED | | AS PLANNED | AS COLLECTED |
|---------------------------------|---------------|--------------|----------------------|---------------|----------------------|
| Date Collected (MM/DD/YYYY): | 07/11/2017 | OK | FIELD MATRIX: | WG | OK |
| TIME COLLECTED (HH:MM): | 1140 | | MEDIA: | UA | |
| PRS ID: | NA | | SAMPLE TECH CODE: | DC | |
| LOCATION ID: | R-57 S1 | | FIELD PREP: | UF | |
| LOCATION TYPE: | mon | | FIELD QC TYPE: | FTB | |
| TOP DEPTH: | NA | | SAMPLE USAGE: | QC | |
| BOTTOM DEPTH: | NA | | EXCAVATED: | | YES / NO / <u>NA</u> |

| PRIORITY | ORDER | CONTAINER | # | PRESERVATIVE | COLLECTED Y/N | SPECIAL INSTRUCTIONS |
|----------|---------------|--------------------------|-----------------|--------------|---------------|----------------------|
| | WSP-8260B-VOA | 40 ML SEPTUM AMBER GLASS | AS 7/11/17 7 | HCL | y | NA |

SAMPLE COMMENTS: none

LOCATION COMMENTS: none

FIELD PARAMETERS:

| | | | | | | |
|-------------------------------|----|-------|------------------|----|----------------------|----|
| Sample Time | NA | HH:MM | Dissolved Oxygen | NA | Flow (in gpm) | NA |
| Oxidation-Reduction Potential | NA | | pH | NA | Specific Conductance | NA |
| Temperature | NA | | Turbidity | NA | | |

COLLECTED BY (PRINT): K. Tow, D. Jaramillo

| | | | |
|--|-------------------------------|--|-------------------------------|
| RELINQUISHED BY (Printed Name) Daniel Jaramillo (Signature) <i>[Signature]</i> | Date/Time 7/11/17 12:45 | RECEIVED BY (Printed Name) K. Tow (Signature) <i>[Signature]</i> | Date/Time 7/11/17 12:45 |
| RELINQUISHED BY (Printed Name) (Signature) | Date/Time | RECEIVED BY (Printed Name) (Signature) | Date/Time |

Report Date: 07/06/2017

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1937

1. Distribution Of Samples In EDD.

| SDG | Analytical Method | Regular Samples | Field Duplicates | Trip Blanks | Field Blanks | Equipment Blanks |
|--------|-------------------|-----------------|------------------|-------------|--------------|------------------|
| 427760 | EPA:170.0 | 1 | | 1 | | |
| 427760 | 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 |
|--------|-------------------|-----------------|-------------|-----------------|------------------|-------------|--------------|------------------|---------------|---------------|-------------------|-------------------|-----------------------|---------------------|-------------------------|-------------|------------------|----------------|----------------|--------------------|----------------|
| 427760 | EPA:170.0 | NA | NA | 1 | | 1 | | | | | | | | | | | | | | | |
| 427760 | SW-846:8260B | 1683867 | 1683867 | 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 |
|-------------------|----------------------------|-----------------|---------------|----------------|-----------------|------------|------------------|------|
| EPA:170.0 | VOC | CAPA-17-139151 | 427760001 | REG | 1 | 0 | 0 | 0 |
| EPA:170.0 | VOC | CAPA-17-139164 | 427760002 | FTB | 1 | 0 | 0 | 0 |
| SW-846:8260B | VOC | CAPA-17-139151 | 427760001 | REG | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | CAPA-17-139164 | 427760002 | FTB | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | LCS | 1203834857 | LCS | 0 | 3 | 70 | 0 |
| SW-846:8260B | VOC | LCS | 1203834858 | LCS | 0 | 3 | 10 | 0 |
| SW-846:8260B | VOC | LCS | 1203835236 | LCS | 0 | 3 | 70 | 0 |
| SW-846:8260B | VOC | LCS | 1203835237 | LCS | 0 | 3 | 10 | 0 |
| SW-846:8260B | VOC | MB | 1203834856 | MB | 80 | 3 | 0 | 0 |
| SW-846:8260B | VOC | MB | 1203835235 | MB | 80 | 3 | 0 | 0 |

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

DATA VALIDATION REPORT

No.

5. Any contaminants in blanks?

| | | | | | | Blank Lab Result | Lab Qualifier | Blank Lab Units | Blank Lab Detection Limit |
|----------------|------------------|------------|-------------------|--------|----------------|------------------|---------------|-----------------|---------------------------|
| Blank FS ID | Blank Lab Sample | Blank Type | Analytical Method | Sample | Parameter Name | 2 | | Deg C | |
| CAPA-17-139164 | 427760002 | TRIP BLANK | EPA:170.0 | W | Temperature | | | | |

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.

DATA VALIDATION REPORT

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

Reason Code

NQ

U_LAB

Description

The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualify. The analyte is detected in the sample.

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-17-139151 | R-57 S1 | REG | EPA:170.0 | 0 | 1 |
| CAPA-17-139151 | R-57 S1 | REG | SW-846:8260B | 0 | 80 |
| CAPA-17-139164 | R-57 S1 | FTB | EPA:170.0 | 0 | 1 |
| CAPA-17-139164 | R-57 S1 | FTB | SW-846:8260B | 0 | 80 |



July 24, 2017

gel.com

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

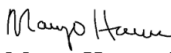
Re: LANL- WQH Water Samples
Work Order: 427760
SDG: 2017-1937

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on July 13, 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: 2017-1937
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 427760
SDG: 2017-1937

Table of Contents

| | |
|--|----|
| Case Narrative..... | 1 |
| Chain of Custody and Supporting Documentation..... | 4 |
| Data Review Qualifier Flag Definition Sheet..... | 8 |
| Volatile Analysis..... | 11 |
| Case Narrative..... | 12 |
| Sample Data Summary..... | 17 |
| Quality Control Summary..... | 24 |
| Quality Control Data..... | 42 |

Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 427760
SDG # : 2017-1937**

July 24, 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 July 13, 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:

| <u>Laboratory ID</u> | <u>Client ID</u> |
|-----------------------------|-------------------------|
| 427760001 | CAPA-17-139151 |
| 427760002 | CAPA-17-139164 |

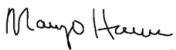
Case Narrative

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 24 July 2017

| State | Certification |
|--------------------------|------------------------------|
| 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 | SC000122017-1 |
| 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 | T104704235-17-12 |
| Utah NELAP | SC000122017-22 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

Chain of Custody and Supporting Documentation

Special Instructions:

| | | | | | |
|------------------|------------------------------------|--------------------------------|--------------|----------------------------------|--------------------------------|
| Relinquished by: | Print Name: <i>Robertson, Mark</i> | Date/Time: <i>4/19/17 3:00</i> | Received by: | Print Name: <i>Zach W. D. Sh</i> | Date/Time: <i>4/19/17 9:00</i> |
| Relinquished by: | Print Name: | Date/Time: | Received by: | Print Name: | Date/Time: |
| Relinquished by: | Print Name: | Date/Time: | Received by: | Print Name: | Date/Time: |

SAMPLE RECEIPT & REVIEW FORM

| | | | |
|--|---|--|--|
| Client: <u>ESHL</u> | | SDG/AR/COC/Work Order: <u>427760</u> | |
| Received By: <u>ZKW</u> | | Date Received: <u>7/13/17</u> | |
| Carrier and Tracking Number | | Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>5908 1782 3296</u> <u>5908 1782 3285</u> <u>5908 1782 3274</u> | |
| | | | |
| Suspected Hazard Information | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. | |
| Shipped as a DOT Hazardous? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Hazard Class Shipped: _____ UN#: _____ | |
| COC/Samples marked or classified as radioactive? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM/mR/Hr Classified as: Rad 1 Rad 2 Rad 3 | |
| Is package, COC, and/or Samples marked HAZ? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> Other: _____ | |

| Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|-------------------------------------|--------------------------|-------------------------------------|---|
| 1 Shipping containers received intact and sealed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>2°C</u> |
| 4 Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____ |
| 5 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 6 Samples requiring chemical preservation at proper pH? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Sample ID's and Containers Affected: <u>-141265 preserved w/ HNO₃ upon arrival</u> If Preservation added, Lot#: <u>170530</u> |
| 7 Do any samples require Volatile Analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No ___ N/A ___ Sample ID's and containers affected: _____ |
| 8 Samples received within holding time? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ID's and tests affected: _____ |
| 9 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sample ID's and containers affected: _____ |
| 10 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 11 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 12 Are sample containers identifiable as GEL provided? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials Mett Date 7/13/17 Page 1 of 1

ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 12JUL17
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2916

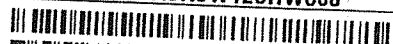
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRSW12CHWC00



FedEx
Express



J151315081301 NY

1 of 2
TRK# 5908 1782 3274
0201
MASTER

X7 RBWA

THU - 13 JUL 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS



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: 12JUL17
ACTWGT: 60.0 LB MAN
CAD: 0014176/CAFE2916

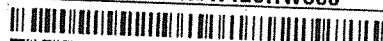
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRSW12CHWC00



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Express



TRK# 5908 1782 3296
0201

X7 RBWA

THU - 13 JUL 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS



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: 12JUL17
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRSW12CHWC00



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2 of 2

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0263
Mstr# 5908 1782 3274

X7 RBWA

THU - 13 JUL 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS



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 #: 2017-1937
Work Order #: 427760**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1683867

Sample Analysis

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

| Sample ID | Client ID |
|------------------|--|
| 427760001 | CAPA-17-139151 |
| 427760002 | CAPA-17-139164 |
| 1203834856 | Method Blank (MB) |
| 1203834857 | Laboratory Control Sample (LCS) |
| 1203834858 | Laboratory Control Sample (LCS) |
| 1203834859 | 427760001(CAPA-17-139151) Post Spike (PS) |
| 1203834860 | 427760001(CAPA-17-139151) Post Spike (PS) |
| 1203834861 | 427760001(CAPA-17-139151) Post Spike Duplicate (PSD) |
| 1203834862 | 427760001(CAPA-17-139151) Post Spike Duplicate (PSD) |

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

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 26.

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

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blank 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 427760001 (CAPA-17-139151) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the required acceptance limits.

Relative Percent Difference (RPD) Statement

The RPD between the matrix spike pair (See Below) were not all within the acceptance limits. However, the spike recoveries passed. The unacceptable RPD may be attributed to matrix interference and/or sample non-homogeneity.

| Sample | Analyte | Value |
|---|------------------------|--------------|
| 1203834859PS and 1203834861PSD (CAPA-17-139151) | 1,2,3-Trichlorobenzene | 42* (0%-20%) |
| | 1,2,4-Trichlorobenzene | 30* (0%-20%) |
| | Hexachlorobutadiene | 56* (0%-20%) |
| | Naphthalene | 24* (0%-20%) |

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

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or sample 1203834857 (LCS) may have required manual integrations due to software limitations.

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:

| Instrument ID | Instrument | System Configuration | Column ID | Column Description | P & T Trap |
|----------------------|---|-----------------------------|------------------|------------------------------------|-----------------------|
| VOA1.I | Hewlett Packard 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: 2017-1937 GEL Work Order: 427760

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: 27 JUL 2017

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1937

Lab Sample ID: 427760001

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-139151

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 12:56

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 12:56

Data File: 072017V1\1R411.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 | 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: 2017-1937

Lab Sample ID: 427760001

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client ID: CAPA-17-139151

Batch ID: 1683867

Run Date: 07/20/2017 12:56

Prep Date: 07/20/2017 12:56

Data File: 072017V1\1R411.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

SDG Number: 2017-1937

Lab Sample ID: 427760001

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-139151

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 12:56

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 12:56

Data File: 072017V1\1R411.D

Column: 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 | 56.9 | 50.0 | ug/L 114 | (71%-134%) |
| Bromofluorobenzene | 54.5 | 50.0 | ug/L 109 | (70%-131%) |
| Toluene-d8 | 48.3 | 50.0 | ug/L 97 | (74%-124%) |

Tentatively Identified Compound Summary

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1937

Lab Sample ID: 427760002

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-139164

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1683867

Inst: VOA1.I

Dilution: 1

Run Date: 07/20/2017 12:27

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 07/20/2017 12:27

Data File: 072017V1\1R410.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 | 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: 2017-1937

Lab Sample ID: 427760002

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client ID: CAPA-17-139164

Batch ID: 1683867

Run Date: 07/20/2017 12:27

Prep Date: 07/20/2017 12:27

Data File: 072017V1\1R410.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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**

SDG Number: 2017-1937

Lab Sample ID: 427760002

Date Collected: 07/11/2017 11:40

Date Received: 07/13/2017 09:10

Matrix: W

Client ID: CAPA-17-139164

Batch ID: 1683867

Run Date: 07/20/2017 12:27

Prep Date: 07/20/2017 12:27

Data File: 072017V1\1R410.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

| 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 | 57.2 | 50.0 | ug/L 114 | (71%-134%) |
| Bromofluorobenzene | 55.1 | 50.0 | ug/L 110 | (70%-131%) |
| Toluene-d8 | 50.2 | 50.0 | ug/L 100 | (74%-124%) |

Tentatively Identified Compound Summary

| CAS No. | Tentatively Identified Compound (TIC) | RT | Estimated | Units | Fit | Qual |
|---------|---------------------------------------|--------|-----------|-------|-----|------|
| | unknown siloxane | 14.549 | 11.7 | ug/L | 0 | J |

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1937**Matrix Type: LIQUID**

| Sample ID | Client ID | DCED4 %REC | TOL %REC | BFB %REC |
|------------|-----------------------|---------------|-------------|-------------|
| 1203834857 | LCS for batch 1683867 | 108 | 97 | 102 |
| 1203834858 | LCS for batch 1683867 | 105 | 99 | 103 |
| 1203834856 | MB for batch 1683867 | 108 | 97 | 109 |
| 427760002 | CAPA-17-139164 | 114 | 100 | 110 |
| 427760001 | CAPA-17-139151 | 114 | 97 | 109 |
| 1203834859 | CAPA-17-139151PS | 100 | 97 | 103 |
| 1203834861 | CAPA-17-139151PSD | 100 | 98 | 103 |
| 1203834860 | CAPA-17-139151PS | 98 | 99 | 101 |
| 1203834862 | CAPA-17-139151PSD | 95 | 96 | 100 |

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: 2017-1937

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 99.4 | 99 | 71-127 |
| 75-05-8 | LCS Acetonitrile | 1250 | 0.0 | 1120 | 89 | 61-125 |
| 67-64-1 | LCS Acetone | 250 | 0.0 | 292 | 117 | 48-157 |
| 74-88-4 | LCS Iodomethane | 250 | 0.0 | 252 | 101 | 72-128 |
| 75-15-0 | LCS Carbon disulfide | 250 | 0.0 | 242 | 97 | 69-138 |
| 108-05-4 | LCS Vinyl acetate | 250 | 0.0 | 257 | 103 | 67-125 |
| 78-93-3 | LCS 2-Butanone | 250 | 0.0 | 259 | 104 | 55-138 |
| 108-10-1 | LCS 4-Methyl-2-pentanone | 250 | 0.0 | 226 | 91 | 66-124 |
| 591-78-6 | LCS 2-Hexanone | 250 | 0.0 | 271 | 108 | 56-140 |
| 75-71-8 | LCS Dichlorodifluoromethane | 50.0 | 0.0 | 48.6 | 97 | 40-160 |
| 74-87-3 | LCS Chloromethane | 50.0 | 0.0 | 44.4 | 89 | 58-135 |
| 75-01-4 | LCS Vinyl chloride | 50.0 | 0.0 | 47.4 | 95 | 65-137 |
| 74-83-9 | LCS Bromomethane | 50.0 | 0.0 | 57.3 | 115 | 63-137 |
| 75-00-3 | LCS Chloroethane | 50.0 | 0.0 | 47.9 | 96 | 69-129 |
| 75-69-4 | LCS Trichlorofluoromethane | 50.0 | 0.0 | 54.8 | 110 | 69-138 |
| 60-29-7 | LCS Ethyl ether | 50.0 | 0.0 | 47.6 | 95 | 72-125 |
| 75-35-4 | LCS 1,1-Dichloroethylene | 50.0 | 0.0 | 53.8 | 108 | 66-126 |
| 75-09-2 | LCS Methylene chloride | 50.0 | 0.0 | 46.8 | 94 | 68-119 |
| 1634-04-4 | LCS tert-Butyl methyl ether | 50.0 | 0.0 | 47.3 | 95 | 76-128 |
| 156-60-5 | LCS trans-1,2-Dichloroethylene | 50.0 | 0.0 | 53.3 | 107 | 71-124 |
| 75-34-3 | LCS 1,1-Dichloroethane | 50.0 | 0.0 | 51.9 | 104 | 73-123 |
| 156-59-2 | LCS cis-1,2-Dichloroethylene | 50.0 | 0.0 | 51.7 | 103 | 75-123 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1937

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 55.7 | 111 | 72-138 |
| 74-97-5 | LCS Bromochloromethane | 50.0 | 0.0 | 50.3 | 101 | 76-125 |
| 67-66-3 | LCS Chloroform | 50.0 | 0.0 | 52.8 | 106 | 76-123 |
| 71-55-6 | LCS 1,1,1-Trichloroethane | 50.0 | 0.0 | 54.9 | 110 | 74-136 |
| 563-58-6 | LCS 1,1-Dichloropropene | 50.0 | 0.0 | 49.9 | 100 | 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 | 55.2 | 110 | 74-122 |
| 71-43-2 | LCS Benzene | 50.0 | 0.0 | 48.7 | 97 | 72-121 |
| 79-01-6 | LCS Trichloroethylene | 50.0 | 0.0 | 52.5 | 105 | 74-125 |
| 78-87-5 | LCS 1,2-Dichloropropane | 50.0 | 0.0 | 49.0 | 98 | 73-121 |
| 74-95-3 | LCS Dibromomethane | 50.0 | 0.0 | 51.9 | 104 | 78-123 |
| 75-27-4 | LCS Bromodichloromethane | 50.0 | 0.0 | 54.8 | 110 | 77-131 |
| 10061-01-5 | LCS cis-1,3-Dichloropropylene | 50.0 | 0.0 | 50.0 | 100 | 78-131 |
| 108-88-3 | LCS Toluene | 50.0 | 0.0 | 45.8 | 92 | 71-121 |
| 10061-02-6 | LCS trans-1,3-Dichloropropylene | 50.0 | 0.0 | 51.5 | 103 | 78-131 |
| 79-00-5 | LCS 1,1,2-Trichloroethane | 50.0 | 0.0 | 47.9 | 96 | 74-118 |
| 142-28-9 | LCS 1,3-Dichloropropane | 50.0 | 0.0 | 47.8 | 96 | 74-118 |
| 127-18-4 | LCS Tetrachloroethylene | 50.0 | 0.0 | 51.5 | 103 | 69-129 |
| 124-48-1 | LCS Dibromochloromethane | 50.0 | 0.0 | 52.9 | 106 | 76-137 |
| 106-93-4 | LCS 1,2-Dibromoethane | 50.0 | 0.0 | 49.1 | 98 | 78-122 |
| 108-90-7 | LCS Chlorobenzene | 50.0 | 0.0 | 48.0 | 96 | 74-120 |
| 100-41-4 | LCS Ethylbenzene | 50.0 | 0.0 | 48.3 | 97 | 73-125 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1937

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 49.8 | 100 | 74-126 |
| 100-42-5 | LCS Styrene | 50.0 | 0.0 | 49.5 | 99 | 72-130 |
| 75-25-2 | LCS Bromoform | 50.0 | 0.0 | 51.3 | 103 | 72-136 |
| 98-82-8 | LCS Isopropylbenzene | 50.0 | 0.0 | 46.9 | 94 | 70-130 |
| 79-34-5 | LCS 1,1,2,2-Tetrachloroethane | 50.0 | 0.0 | 44.9 | 90 | 70-126 |
| 96-18-4 | LCS 1,2,3-Trichloropropane | 50.0 | 0.0 | 48.4 | 97 | 74-122 |
| 108-86-1 | LCS Bromobenzene | 50.0 | 0.0 | 47.1 | 94 | 74-120 |
| 103-65-1 | LCS n-Propylbenzene | 50.0 | 0.0 | 45.6 | 91 | 67-128 |
| 108-67-8 | LCS 1,3,5-Trimethylbenzene | 50.0 | 0.0 | 48.1 | 96 | 70-129 |
| 95-49-8 | LCS 2-Chlorotoluene | 50.0 | 0.0 | 47.3 | 95 | 71-124 |
| 106-43-4 | LCS 4-Chlorotoluene | 50.0 | 0.0 | 46.8 | 94 | 69-125 |
| 98-06-6 | LCS tert-Butylbenzene | 50.0 | 0.0 | 49.3 | 99 | 72-130 |
| 95-63-6 | LCS 1,2,4-Trimethylbenzene | 50.0 | 0.0 | 47.9 | 96 | 70-126 |
| 135-98-8 | LCS sec-Butylbenzene | 50.0 | 0.0 | 47.7 | 95 | 70-131 |
| 99-87-6 | LCS 4-Isopropyltoluene | 50.0 | 0.0 | 49.0 | 98 | 71-131 |
| 541-73-1 | LCS 1,3-Dichlorobenzene | 50.0 | 0.0 | 47.0 | 94 | 72-121 |
| 106-46-7 | LCS 1,4-Dichlorobenzene | 50.0 | 0.0 | 47.6 | 95 | 71-120 |
| 104-51-8 | LCS n-Butylbenzene | 50.0 | 0.0 | 47.7 | 95 | 68-134 |
| 96-12-8 | LCS 1,2-Dibromo-3-chloropropane | 50.0 | 0.0 | 47.6 | 95 | 68-141 |
| 87-68-3 | LCS Hexachlorobutadiene | 50.0 | 0.0 | 51.5 | 103 | 72-136 |
| 91-20-3 | LCS Naphthalene | 50.0 | 0.0 | 50.6 | 101 | 72-132 |
| 87-61-6 | LCS 1,2,3-Trichlorobenzene | 50.0 | 0.0 | 52.6 | 105 | 70-130 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1937

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834857

Instrument: VOA1.I

Analysis Date: 07/20/2017 09:05

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 50.6 | 101 | 71-129 |
| 630-20-6 | LCS 1,1,1,2-Tetrachloroethane | 50.0 | 0.0 | 53.6 | 107 | 79-127 |
| 95-50-1 | LCS 1,2-Dichlorobenzene | 50.0 | 0.0 | 46.8 | 94 | 74-120 |
| 71-36-3 | LCS n-Butyl alcohol | 5000 | 0.0 | 5300 | 106 | 63-138 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1937

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1683867

Matrix: WATER

Lab Sample ID 1203834858

Instrument: VOA1.I

Analysis Date: 07/20/2017 10:03

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 256 | 103 | 60-140 |
| 76-13-1 | LCS Trichlorotrifluoroethane | 250 | 0.0 | 279 | 112 | 61-148 |
| 107-05-1 | LCS Allyl chloride | 250 | 0.0 | 248 | 99 | 59-125 |
| 107-13-1 | LCS Acrylonitrile | 250 | 0.0 | 222 | 89 | 65-122 |
| 107-12-0 | LCS Propionitrile | 250 | 0.0 | 215 | 86 | 64-124 |
| 126-98-7 | LCS Methacrylonitrile | 250 | 0.0 | 237 | 95 | 64-126 |
| 80-62-6 | LCS Methyl methacrylate | 250 | 0.0 | 230 | 92 | 69-127 |
| 97-63-2 | LCS Ethyl methacrylate | 250 | 0.0 | 231 | 93 | 66-130 |
| 78-83-1 | LCS Isobutyl alcohol | 2500 | 0.0 | 2270 | 91 | 65-135 |
| 126-99-8 | LCS 2-Chloro-1,3-butadiene | 50.0 | 0.0 | 49.1 | 98 | 66-147 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1937

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 79.5 | 79 | 59-132 |
| 75-05-8 | PS Acetonitrile | 1250 | 0.00 U | 1040 | 83 | 56-131 |
| 67-64-1 | PS Acetone | 250 | 0.00 U | 129 | 52 | 25-155 |
| 74-88-4 | PS Iodomethane | 250 | 0.00 U | 220 | 88 | 66-133 |
| 75-15-0 | PS Carbon disulfide | 250 | 0.00 U | 201 | 80 | 61-141 |
| 108-05-4 | PS Vinyl acetate | 250 | 0.00 U | 226 | 91 | 48-133 |
| 78-93-3 | PS 2-Butanone | 250 | 0.00 U | 145 | 58 | 25-143 |
| 108-10-1 | PS 4-Methyl-2-pentanone | 250 | 0.00 U | 201 | 80 | 61-127 |
| 591-78-6 | PS 2-Hexanone | 250 | 0.00 U | 164 | 66 | 33-138 |
| 75-71-8 | PS Dichlorodifluoromethane | 50.0 | 0.00 U | 35.6 | 71 | 33-164 |
| 74-87-3 | PS Chloromethane | 50.0 | 0.00 U | 38.9 | 78 | 53-139 |
| 75-01-4 | PS Vinyl chloride | 50.0 | 0.00 U | 40.3 | 81 | 58-140 |
| 74-83-9 | PS Bromomethane | 50.0 | 0.00 U | 45.6 | 91 | 59-146 |
| 75-00-3 | PS Chloroethane | 50.0 | 0.00 U | 42.2 | 84 | 65-129 |
| 75-69-4 | PS Trichlorofluoromethane | 50.0 | 0.00 U | 40.9 | 82 | 65-141 |
| 60-29-7 | PS Ethyl ether | 50.0 | 0.00 U | 46.1 | 92 | 69-127 |
| 75-35-4 | PS 1,1-Dichloroethylene | 50.0 | 0.00 U | 41.5 | 83 | 59-130 |
| 75-09-2 | PS Methylene chloride | 50.0 | 0.00 U | 43.0 | 86 | 62-123 |
| 1634-04-4 | PS tert-Butyl methyl ether | 50.0 | 0.00 U | 41.8 | 84 | 69-132 |
| 156-60-5 | PS trans-1,2-Dichloroethylene | 50.0 | 0.00 U | 44.1 | 88 | 65-127 |
| 75-34-3 | PS 1,1-Dichloroethane | 50.0 | 0.00 U | 45.0 | 90 | 67-127 |
| 156-59-2 | PS cis-1,2-Dichloroethylene | 50.0 | 0.00 U | 45.8 | 92 | 69-127 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1937

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 41.9 | 84 | 66-137 |
| 74-97-5 | PS Bromochloromethane | 50.0 | 0.00 U | 46.2 | 92 | 71-130 |
| 67-66-3 | PS Chloroform | 50.0 | 0.00 U | 45.5 | 91 | 71-129 |
| 71-55-6 | PS 1,1,1-Trichloroethane | 50.0 | 0.00 U | 42.1 | 84 | 69-139 |
| 563-58-6 | PS 1,1-Dichloropropene | 50.0 | 0.00 U | 39.5 | 79 | 67-130 |
| 56-23-5 | PS Carbon tetrachloride | 50.0 | 0.00 U | 42.5 | 85 | 66-143 |
| 107-06-2 | PS 1,2-Dichloroethane | 50.0 | 0.00 U | 47.2 | 94 | 69-130 |
| 71-43-2 | PS Benzene | 50.0 | 0.00 U | 42.5 | 85 | 66-125 |
| 79-01-6 | PS Trichloroethylene | 50.0 | 0.00 U | 42.8 | 86 | 65-131 |
| 78-87-5 | PS 1,2-Dichloropropane | 50.0 | 0.00 U | 44.6 | 89 | 67-127 |
| 74-95-3 | PS Dibromomethane | 50.0 | 0.00 U | 45.8 | 92 | 72-129 |
| 75-27-4 | PS Bromodichloromethane | 50.0 | 0.00 U | 46.6 | 93 | 70-138 |
| 10061-01-5 | PS cis-1,3-Dichloropropylene | 50.0 | 0.00 U | 44.0 | 88 | 70-134 |
| 108-88-3 | PS Toluene | 50.0 | 0.00 U | 40.0 | 80 | 60-126 |
| 10061-02-6 | PS trans-1,3-Dichloropropylene | 50.0 | 0.00 U | 45.7 | 91 | 69-135 |
| 79-00-5 | PS 1,1,2-Trichloroethane | 50.0 | 0.00 U | 44.8 | 90 | 66-125 |
| 142-28-9 | PS 1,3-Dichloropropane | 50.0 | 0.00 U | 43.9 | 88 | 67-124 |
| 127-18-4 | PS Tetrachloroethylene | 50.0 | 0.00 U | 40.3 | 81 | 60-130 |
| 124-48-1 | PS Dibromochloromethane | 50.0 | 0.00 U | 47.4 | 95 | 68-143 |
| 106-93-4 | PS 1,2-Dibromoethane | 50.0 | 0.00 U | 45.6 | 91 | 71-127 |
| 108-90-7 | PS Chlorobenzene | 50.0 | 0.00 U | 41.7 | 83 | 64-124 |
| 100-41-4 | PS Ethylbenzene | 50.0 | 0.00 U | 39.6 | 79 | 61-130 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-1937

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 41.0 | 82 | 62-131 |
| 100-42-5 | PS Styrene | 50.0 | 0.00 U | 41.8 | 84 | 59-135 |
| 75-25-2 | PS Bromoform | 50.0 | 0.00 U | 47.4 | 95 | 64-138 |
| 98-82-8 | PS Isopropylbenzene | 50.0 | 0.00 U | 38.3 | 77 | 55-133 |
| 79-34-5 | PS 1,1,2,2-Tetrachloroethane | 50.0 | 0.00 U | 42.7 | 85 | 62-129 |
| 96-18-4 | PS 1,2,3-Trichloropropane | 50.0 | 0.00 U | 44.9 | 90 | 70-124 |
| 108-86-1 | PS Bromobenzene | 50.0 | 0.00 U | 41.8 | 84 | 62-124 |
| 103-65-1 | PS n-Propylbenzene | 50.0 | 0.00 U | 36.4 | 73 | 50-133 |
| 108-67-8 | PS 1,3,5-Trimethylbenzene | 50.0 | 0.00 U | 38.6 | 77 | 53-135 |
| 95-49-8 | PS 2-Chlorotoluene | 50.0 | 0.00 U | 39.4 | 79 | 56-128 |
| 106-43-4 | PS 4-Chlorotoluene | 50.0 | 0.00 U | 37.8 | 76 | 53-130 |
| 98-06-6 | PS tert-Butylbenzene | 50.0 | 0.00 U | 38.9 | 78 | 55-135 |
| 95-63-6 | PS 1,2,4-Trimethylbenzene | 50.0 | 0.00 U | 38.3 | 77 | 53-132 |
| 135-98-8 | PS sec-Butylbenzene | 50.0 | 0.00 U | 36.5 | 73 | 50-138 |
| 99-87-6 | PS 4-Isopropyltoluene | 50.0 | 0.00 U | 36.2 | 72 | 49-138 |
| 541-73-1 | PS 1,3-Dichlorobenzene | 50.0 | 0.00 U | 38.4 | 77 | 56-126 |
| 106-46-7 | PS 1,4-Dichlorobenzene | 50.0 | 0.00 U | 38.3 | 77 | 55-125 |
| 104-51-8 | PS n-Butylbenzene | 50.0 | 0.00 U | 33.5 | 67 | 43-142 |
| 96-12-8 | PS 1,2-Dibromo-3-chloropropane | 50.0 | 0.00 U | 39.9 | 80 | 62-141 |
| 87-68-3 | PS Hexachlorobutadiene | 50.0 | 0.00 U | 23.8 | 48 | 40-147 |
| 91-20-3 | PS Naphthalene | 50.0 | 0.00 U | 37.3 | 75 | 62-134 |
| 87-61-6 | PS 1,2,3-Trichlorobenzene | 50.0 | 0.00 U | 30.9 | 62 | 52-135 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-1937

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834859

Instrument: VOA1.I

Analysis Date: 07/20/2017 18:43

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 32.6 | 65 | 50-133 |
| 630-20-6 | PS 1,1,1,2-Tetrachloroethane | 50.0 | 0.00 U | 45.7 | 91 | 71-133 |
| 95-50-1 | PS 1,2-Dichlorobenzene | 50.0 | 0.00 U | 39.6 | 79 | 60-125 |
| 71-36-3 | PS n-Butyl alcohol | 5000 | 0.00 U | 4580 | 92 | 60-140 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-1937

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 86.8 | 87 | 59-132 | 9 | 0-20 |
| 75-05-8 | PSD Acetonitrile | 1250 | 0.00 U | 1040 | 83 | 56-131 | 0 | 0-20 |
| 67-64-1 | PSD Acetone | 250 | 0.00 U | 130 | 52 | 25-155 | 0 | 0-20 |
| 74-88-4 | PSD Iodomethane | 250 | 0.00 U | 225 | 90 | 66-133 | 2 | 0-20 |
| 75-15-0 | PSD Carbon disulfide | 250 | 0.00 U | 206 | 82 | 61-141 | 3 | 0-20 |
| 108-05-4 | PSD Vinyl acetate | 250 | 0.00 U | 230 | 92 | 48-133 | 1 | 0-20 |
| 78-93-3 | PSD 2-Butanone | 250 | 0.00 U | 148 | 59 | 25-143 | 1 | 0-20 |
| 108-10-1 | PSD 4-Methyl-2-pentanone | 250 | 0.00 U | 205 | 82 | 61-127 | 2 | 0-20 |
| 591-78-6 | PSD 2-Hexanone | 250 | 0.00 U | 166 | 66 | 33-138 | 1 | 0-20 |
| 75-71-8 | PSD Dichlorodifluoromethane | 50.0 | 0.00 U | 34.7 | 69 | 33-164 | 2 | 0-20 |
| 74-87-3 | PSD Chloromethane | 50.0 | 0.00 U | 38.8 | 78 | 53-139 | 0 | 0-20 |
| 75-01-4 | PSD Vinyl chloride | 50.0 | 0.00 U | 39.5 | 79 | 58-140 | 2 | 0-20 |
| 74-83-9 | PSD Bromomethane | 50.0 | 0.00 U | 46.3 | 93 | 59-146 | 2 | 0-20 |
| 75-00-3 | PSD Chloroethane | 50.0 | 0.00 U | 43.1 | 86 | 65-129 | 2 | 0-20 |
| 75-69-4 | PSD Trichlorofluoromethane | 50.0 | 0.00 U | 41.9 | 84 | 65-141 | 3 | 0-20 |
| 60-29-7 | PSD Ethyl ether | 50.0 | 0.00 U | 47.2 | 94 | 69-127 | 2 | 0-20 |
| 75-35-4 | PSD 1,1-Dichloroethylene | 50.0 | 0.00 U | 43.1 | 86 | 59-130 | 4 | 0-20 |
| 75-09-2 | PSD Methylene chloride | 50.0 | 0.00 U | 44.6 | 89 | 62-123 | 4 | 0-20 |
| 1634-04-4 | PSD tert-Butyl methyl ether | 50.0 | 0.00 U | 43.5 | 87 | 69-132 | 4 | 0-20 |
| 156-60-5 | PSD trans-1,2-Dichloroethylene | 50.0 | 0.00 U | 45.6 | 91 | 65-127 | 3 | 0-20 |
| 75-34-3 | PSD 1,1-Dichloroethane | 50.0 | 0.00 U | 46.0 | 92 | 67-127 | 2 | 0-20 |
| 156-59-2 | PSD cis-1,2-Dichloroethylene | 50.0 | 0.00 U | 47.2 | 94 | 69-127 | 3 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-1937

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 42.7 | 85 | 66-137 | 2 | 0-20 |
| 74-97-5 | PSD Bromochloromethane | 50.0 | 0.00 U | 47.5 | 95 | 71-130 | 3 | 0-20 |
| 67-66-3 | PSD Chloroform | 50.0 | 0.00 U | 46.6 | 93 | 71-129 | 2 | 0-20 |
| 71-55-6 | PSD 1,1,1-Trichloroethane | 50.0 | 0.00 U | 43.3 | 87 | 69-139 | 3 | 0-20 |
| 563-58-6 | PSD 1,1-Dichloropropene | 50.0 | 0.00 U | 41.7 | 83 | 67-130 | 5 | 0-20 |
| 56-23-5 | PSD Carbon tetrachloride | 50.0 | 0.00 U | 44.5 | 89 | 66-143 | 5 | 0-20 |
| 107-06-2 | PSD 1,2-Dichloroethane | 50.0 | 0.00 U | 48.7 | 97 | 69-130 | 3 | 0-20 |
| 71-43-2 | PSD Benzene | 50.0 | 0.00 U | 44.1 | 88 | 66-125 | 4 | 0-20 |
| 79-01-6 | PSD Trichloroethylene | 50.0 | 0.00 U | 44.9 | 90 | 65-131 | 5 | 0-20 |
| 78-87-5 | PSD 1,2-Dichloropropane | 50.0 | 0.00 U | 45.3 | 91 | 67-127 | 2 | 0-20 |
| 74-95-3 | PSD Dibromomethane | 50.0 | 0.00 U | 47.8 | 96 | 72-129 | 4 | 0-20 |
| 75-27-4 | PSD Bromodichloromethane | 50.0 | 0.00 U | 48.9 | 98 | 70-138 | 5 | 0-20 |
| 10061-01-5 | PSD cis-1,3-Dichloropropylene | 50.0 | 0.00 U | 45.7 | 91 | 70-134 | 4 | 0-20 |
| 108-88-3 | PSD Toluene | 50.0 | 0.00 U | 41.5 | 83 | 60-126 | 4 | 0-20 |
| 10061-02-6 | PSD trans-1,3-Dichloropropylene | 50.0 | 0.00 U | 47.4 | 95 | 69-135 | 4 | 0-20 |
| 79-00-5 | PSD 1,1,2-Trichloroethane | 50.0 | 0.00 U | 46.1 | 92 | 66-125 | 3 | 0-20 |
| 142-28-9 | PSD 1,3-Dichloropropane | 50.0 | 0.00 U | 45.3 | 91 | 67-124 | 3 | 0-20 |
| 127-18-4 | PSD Tetrachloroethylene | 50.0 | 0.00 U | 43.5 | 87 | 60-130 | 8 | 0-20 |
| 124-48-1 | PSD Dibromochloromethane | 50.0 | 0.00 U | 49.8 | 100 | 68-143 | 5 | 0-20 |
| 106-93-4 | PSD 1,2-Dibromoethane | 50.0 | 0.00 U | 47.1 | 94 | 71-127 | 3 | 0-20 |
| 108-90-7 | PSD Chlorobenzene | 50.0 | 0.00 U | 44.8 | 90 | 64-124 | 7 | 0-20 |
| 100-41-4 | PSD Ethylbenzene | 50.0 | 0.00 U | 42.6 | 85 | 61-130 | 7 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-1937

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 44.3 | 89 | 62-131 | 8 | 0-20 |
| 100-42-5 | PSD Styrene | 50.0 | 0.00 U | 45.2 | 90 | 59-135 | 8 | 0-20 |
| 75-25-2 | PSD Bromoform | 50.0 | 0.00 U | 49.3 | 99 | 64-138 | 4 | 0-20 |
| 98-82-8 | PSD Isopropylbenzene | 50.0 | 0.00 U | 42.1 | 84 | 55-133 | 9 | 0-20 |
| 79-34-5 | PSD 1,1,2,2-Tetrachloroethane | 50.0 | 0.00 U | 44.1 | 88 | 62-129 | 3 | 0-20 |
| 96-18-4 | PSD 1,2,3-Trichloropropane | 50.0 | 0.00 U | 47.3 | 95 | 70-124 | 5 | 0-20 |
| 108-86-1 | PSD Bromobenzene | 50.0 | 0.00 U | 45.3 | 91 | 62-124 | 8 | 0-20 |
| 103-65-1 | PSD n-Propylbenzene | 50.0 | 0.00 U | 41.0 | 82 | 50-133 | 12 | 0-20 |
| 108-67-8 | PSD 1,3,5-Trimethylbenzene | 50.0 | 0.00 U | 43.3 | 87 | 53-135 | 12 | 0-20 |
| 95-49-8 | PSD 2-Chlorotoluene | 50.0 | 0.00 U | 44.4 | 89 | 56-128 | 12 | 0-20 |
| 106-43-4 | PSD 4-Chlorotoluene | 50.0 | 0.00 U | 43.1 | 86 | 53-130 | 13 | 0-20 |
| 98-06-6 | PSD tert-Butylbenzene | 50.0 | 0.00 U | 44.3 | 89 | 55-135 | 13 | 0-20 |
| 95-63-6 | PSD 1,2,4-Trimethylbenzene | 50.0 | 0.00 U | 43.5 | 87 | 53-132 | 13 | 0-20 |
| 135-98-8 | PSD sec-Butylbenzene | 50.0 | 0.00 U | 42.2 | 84 | 50-138 | 14 | 0-20 |
| 99-87-6 | PSD 4-Isopropyltoluene | 50.0 | 0.00 U | 43.1 | 86 | 49-138 | 17 | 0-20 |
| 541-73-1 | PSD 1,3-Dichlorobenzene | 50.0 | 0.00 U | 43.0 | 86 | 56-126 | 11 | 0-20 |
| 106-46-7 | PSD 1,4-Dichlorobenzene | 50.0 | 0.00 U | 44.1 | 88 | 55-125 | 14 | 0-20 |
| 104-51-8 | PSD n-Butylbenzene | 50.0 | 0.00 U | 41.1 | 82 | 43-142 | 20 | 0-20 |
| 96-12-8 | PSD 1,2-Dibromo-3-chloropropane | 50.0 | 0.00 U | 43.6 | 87 | 62-141 | 9 | 0-20 |
| 87-68-3 | PSD Hexachlorobutadiene | 50.0 | 0.00 U | 42.4 | 85 | 40-147 | 56 * | 0-20 |
| 91-20-3 | PSD Naphthalene | 50.0 | 0.00 U | 47.6 | 95 | 62-134 | 24 * | 0-20 |
| 87-61-6 | PSD 1,2,3-Trichlorobenzene | 50.0 | 0.00 U | 47.1 | 94 | 52-135 | 42 * | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-1937

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834861

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:12

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 44.1 | 88 | 50-133 | 30 * | 0-20 |
| 630-20-6 | PSD 1,1,1,2-Tetrachloroethane | 50.0 | 0.00 U | 48.8 | 98 | 71-133 | 7 | 0-20 |
| 95-50-1 | PSD 1,2-Dichlorobenzene | 50.0 | 0.00 U | 44.0 | 88 | 60-125 | 11 | 0-20 |
| 71-36-3 | PSD n-Butyl alcohol | 5000 | 0.00 U | 4520 | 90 | 60-140 | 1 | 0-20 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-1937

Sample Type: Post Spike

Client ID: CAPA-17-139151PS

Matrix: W

Lab Sample ID 1203834860

Instrument: VOA1.I

Analysis Date: 07/20/2017 19:41

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 258 | 103 | 49-141 |
| 76-13-1 | PS Trichlorotrifluoroethane | 250 | 0.00 U | 237 | 95 | 57-149 |
| 107-05-1 | PS Allyl chloride | 250 | 0.00 U | 236 | 95 | 54-128 |
| 107-13-1 | PS Acrylonitrile | 250 | 0.00 U | 234 | 93 | 59-129 |
| 107-12-0 | PS Propionitrile | 250 | 0.00 U | 234 | 93 | 58-131 |
| 126-98-7 | PS Methacrylonitrile | 250 | 0.00 U | 241 | 96 | 59-134 |
| 80-62-6 | PS Methyl methacrylate | 250 | 0.00 U | 237 | 95 | 62-135 |
| 97-63-2 | PS Ethyl methacrylate | 250 | 0.00 U | 234 | 94 | 60-136 |
| 78-83-1 | PS Isobutyl alcohol | 2500 | 0.00 U | 2380 | 95 | 60-143 |
| 126-99-8 | PS 2-Chloro-1,3-butadiene | 50.0 | 0.00 U | 42.1 | 84 | 63-146 |

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-1937

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-139151PSD

Matrix: W

Lab Sample ID 1203834862

Instrument: VOA1.I

Analysis Date: 07/20/2017 20:10

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1683867

| 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 | 243 | 97 | 49-141 | 6 | 0-20 |
| 76-13-1 | PSD Trichlorotrifluoroethane | 250 | 0.00 U | 230 | 92 | 57-149 | 3 | 0-20 |
| 107-05-1 | PSD Allyl chloride | 250 | 0.00 U | 233 | 93 | 54-128 | 1 | 0-20 |
| 107-13-1 | PSD Acrylonitrile | 250 | 0.00 U | 219 | 88 | 59-129 | 6 | 0-20 |
| 107-12-0 | PSD Propionitrile | 250 | 0.00 U | 214 | 86 | 58-131 | 9 | 0-20 |
| 126-98-7 | PSD Methacrylonitrile | 250 | 0.00 U | 227 | 91 | 59-134 | 6 | 0-20 |
| 80-62-6 | PSD Methyl methacrylate | 250 | 0.00 U | 225 | 90 | 62-135 | 5 | 0-20 |
| 97-63-2 | PSD Ethyl methacrylate | 250 | 0.00 U | 223 | 89 | 60-136 | 5 | 0-20 |
| 78-83-1 | PSD Isobutyl alcohol | 2500 | 0.00 U | 2160 | 86 | 60-143 | 10 | 0-20 |
| 126-99-8 | PSD 2-Chloro-1,3-butadiene | 50.0 | 0.00 U | 41.8 | 84 | 63-146 | 1 | 0-20 |

Method Blank Summary

Page 1 of 1

| | | | | | |
|----------------|----------------------|----------------|------------------|------------|-------------------|
| SDG Number: | 2017-1937 | Client: | ARSL004 | Matrix: | WATER |
| Client ID: | MB for batch 1683867 | Instrument ID: | VOA1.I | Data File: | 072017V1\1R406A.D |
| Lab Sample ID: | 1203834856 | Prep Date: | 07/20/2017 10:32 | Analyzed: | 07/20/17 10:32 |
| 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 1683867 | 1203834857 | 072017V1\1R403A.D | 07/20/17 | 0905 |
| 02 LCS for batch 1683867 | 1203834858 | 072017V1\1R405A.D | 07/20/17 | 1003 |
| 03 CAPA-17-139164 | 427760002 | 072017V1\1R410.D | 07/20/17 | 1227 |
| 04 CAPA-17-139151 | 427760001 | 072017V1\1R411.D | 07/20/17 | 1256 |
| 05 CAPA-17-139151PS | 1203834859 | 072017V1\1R423.D | 07/20/17 | 1843 |
| 06 CAPA-17-139151PSD | 1203834861 | 072017V1\1R424.D | 07/20/17 | 1912 |
| 07 CAPA-17-139151PS | 1203834860 | 072017V1\1R425.D | 07/20/17 | 1941 |
| 08 CAPA-17-139151PSD | 1203834862 | 072017V1\1R426.D | 07/20/17 | 2010 |

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

| | |
|--|-----------------------------|
| SDG Number: 2017-1937 | Matrix: WATER |
| Lab Sample ID: 1203834856 | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 |
| Client ID: MB for batch 1683867 | Method: SW-846:8260B |
| Batch ID: 1683867 | Project: QC |
| Run Date: 07/20/2017 10:32 | SOP Ref: GL-OA-E-038 |
| Prep Date: 07/20/2017 10:32 | Dilution: 1 |
| Data File: 072017V1\1R406A.D | Purge Vol: 5 mL |
| | 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 | 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: 2017-1937 | | Matrix: | WATER |
| Lab Sample ID: 1203834856 | | | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 | Project: | QC |
| Client ID: MB for batch 1683867 | Method: SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: 1683867 | Inst: VOA1.I | Dilution: | 1 |
| Run Date: 07/20/2017 10:32 | Analyst: PXY1 | Purge Vol: | 5 mL |
| Prep Date: 07/20/2017 10:32 | | | |
| Data File: 072017V1\1R406A.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

| | |
|--|-----------------------------|
| SDG Number: 2017-1937 | Matrix: WATER |
| Lab Sample ID: 1203834856 | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 |
| Client ID: MB for batch 1683867 | Method: SW-846:8260B |
| Batch ID: 1683867 | Inst: VOA1.I |
| Run Date: 07/20/2017 10:32 | Analyst: PXY1 |
| Prep Date: 07/20/2017 10:32 | Purge Vol: 5 mL |
| Data File: 072017V1\1R406A.D | Column: DB-624 |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 54.2 | 50.0 | ug/L 108 | (71%-134%) |
| Bromofluorobenzene | 54.5 | 50.0 | ug/L 109 | (70%-131%) |
| Toluene-d8 | 48.4 | 50.0 | ug/L 97 | (74%-124%) |

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

| | | | |
|--|-----------------------------|-------------------|-------------|
| SDG Number: 2017-1937 | | Matrix: | WATER |
| Lab Sample ID: 1203834857 | | | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 | Project: | QC |
| Client ID: LCS for batch 1683867 | Method: SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: 1683867 | Inst: VOA1.I | Dilution: | 1 |
| Run Date: 07/20/2017 09:05 | Analyst: PXY1 | Purge Vol: | 5 mL |
| Prep Date: 07/20/2017 09:05 | | | |
| Data File: 072017V1\1R403A.D | Column: DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | 53.6 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 54.9 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 44.9 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 47.9 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 51.9 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 53.8 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 49.9 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 52.6 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | | 48.4 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 50.6 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | | 47.9 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 47.6 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 49.1 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | | 46.8 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | | 55.2 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 49.0 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 48.1 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 47.0 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 47.8 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 47.6 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 55.7 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 259 | 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 | | 47.3 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 271 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 46.8 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 49.0 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 226 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 292 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | | 1120 | 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 | | 48.7 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 47.1 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 50.3 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 54.8 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 51.3 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1937

Lab Sample ID: 1203834857

Client Sample: QC for batch 1683867

Client ID: LCS for batch 1683867

Batch ID: 1683867

Run Date: 07/20/2017 09:05

Prep Date: 07/20/2017 09:05

Data File: 072017V1\1R403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

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 | | 57.3 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 242 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 57.4 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 48.0 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 47.9 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 52.8 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 44.4 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 52.9 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 51.9 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 48.6 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 47.6 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 48.3 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 51.5 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 252 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 46.9 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 75-09-2 | Methylene chloride | | 46.8 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | | 50.6 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 49.5 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 51.5 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 45.8 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 52.5 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 54.8 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 257 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 47.4 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 51.7 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 50.0 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | | 99.4 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | | 5300 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 47.7 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 45.6 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 49.8 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 47.7 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

| | | | |
|-----------------------|------------------------------|-------------------|---------------------|
| SDG Number: | 2017-1937 | Matrix: | WATER |
| Lab Sample ID: | 1203834857 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 |
| Client ID: | LCS for batch 1683867 | Method: | SW-846:8260B |
| Batch ID: | 1683867 | Inst: | VOA1.I |
| Run Date: | 07/20/2017 09:05 | Analyst: | PXY1 |
| Prep Date: | 07/20/2017 09:05 | Purge Vol: | 5 mL |
| Data File: | 072017V1\1R403A.D | Column: | DB-624 |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 47.3 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 49.3 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 53.3 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 51.5 | ug/L | 0.300 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 53.8 | 50.0 | 108 | (71%-134%) |
| Bromofluorobenzene | 50.9 | 50.0 | 102 | (70%-131%) |
| Toluene-d8 | 48.6 | 50.0 | 97 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | |
|-----------------------|------------------------------|-------------------|---------------------|
| SDG Number: | 2017-1937 | Matrix: | WATER |
| Lab Sample ID: | 1203834858 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 |
| Client ID: | LCS for batch 1683867 | Method: | SW-846:8260B |
| Batch ID: | 1683867 | Inst: | VOA1.I |
| Run Date: | 07/20/2017 10:03 | Analyst: | PXY1 |
| Prep Date: | 07/20/2017 10:03 | Purge Vol: | 5 mL |
| Data File: | 072017V1\1R405A.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 | | 49.1 | 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 | | 256 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 222 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 248 | 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: 2017-1937 | Matrix: WATER |
| Lab Sample ID: 1203834858 | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 |
| Client ID: LCS for batch 1683867 | Method: SW-846:8260B |
| Batch ID: 1683867 | Project: QC |
| Run Date: 07/20/2017 10:03 | SOP Ref: GL-OA-E-038 |
| Prep Date: 07/20/2017 10:03 | Dilution: 1 |
| Data File: 072017V1\1R405A.D | Purge Vol: 5 mL |
| | 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 | | 231 | 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 | | 2270 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 237 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 230 | 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 | | 215 | 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 | | 279 | 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

| | | | |
|----------------|-----------------------|----------|--------------|
| SDG Number: | 2017-1937 | Matrix: | WATER |
| Lab Sample ID: | 1203834858 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 |
| Client ID: | LCS for batch 1683867 | Method: | SW-846:8260B |
| Batch ID: | 1683867 | Inst: | VOA1.I |
| Run Date: | 07/20/2017 10:03 | Analyst: | PXY1 |
| Prep Date: | 07/20/2017 10:03 | | |
| Data File: | 072017V1\1R405A.D | Column: | DB-624 |

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

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 52.7 | 50.0 | 105 | (71%-134%) |
| Bromofluorobenzene | 51.5 | 50.0 | 103 | (70%-131%) |
| Toluene-d8 | 49.7 | 50.0 | 99 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834859 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 18:43 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 18:43 | | | | |
| Data File: | 072017V1\1R423.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | 45.7 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 42.1 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 42.7 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 44.8 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 45.0 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 41.5 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 39.5 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 30.9 | 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 | | 32.6 | ug/L | 0.300 | 1.00 |
| 95-63-6 | 1,2,4-Trimethylbenzene | | 38.3 | ug/L | 0.300 | 1.00 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | | 39.9 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 45.6 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | | 39.6 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | | 47.2 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 44.6 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 38.6 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 38.4 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 43.9 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 38.3 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 41.9 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 145 | 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 | | 39.4 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 164 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 37.8 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 36.2 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 201 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 129 | 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 | | 42.5 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 41.8 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 46.2 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 46.6 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 47.4 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834859 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 18:43 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 18:43 | | | | |
| Data File: | 072017V1\1R423.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | | 45.6 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 201 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 42.5 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 41.7 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 42.2 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 45.5 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 38.9 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 47.4 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 45.8 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 35.6 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 46.1 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 39.6 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 23.8 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 220 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 38.3 | 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 | | 43.0 | ug/L | 1.00 | 10.0 |
| 91-20-3 | Naphthalene | | 37.3 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 41.8 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 40.3 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 40.0 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 42.8 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 40.9 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 226 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 40.3 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 45.8 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 44.0 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | | 79.5 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | | 4580 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 33.5 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 36.4 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 41.0 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 36.5 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834859 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 18:43 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 18:43 | | | | |
| Data File: | 072017V1\1R423.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 41.8 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 38.9 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 44.1 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 45.7 | ug/L | 0.300 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 50.0 | 50.0 | 100 | (71%-134%) |
| Bromofluorobenzene | 51.3 | 50.0 | 103 | (70%-131%) |
| Toluene-d8 | 48.4 | 50.0 | 97 | (74%-124%) |

Volatile
Certificate of Analysis
Sample Summary

| | | |
|--|---|-----------------------------|
| SDG Number: 2017-1937 | Date Collected: 07/11/2017 11:40 | Matrix: W |
| Lab Sample ID: 1203834860 | Date Received: 07/13/2017 09:10 | |
| Client Sample: QC for batch 1683867 | Client: ARSL004 | Project: QC |
| Client ID: CAPA-17-139151PS | Method: SW-846:8260B | SOP Ref: GL-OA-E-038 |
| Batch ID: 1683867 | Inst: VOA1.I | Dilution: 1 |
| Run Date: 07/20/2017 19:41 | Analyst: PXY1 | Purge Vol: 5 mL |
| Prep Date: 07/20/2017 19:41 | | |
| Data File: 072017V1\1R425.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 | | 42.1 | 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 | | 258 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 234 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 236 | 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: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834860 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 19:41 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 19:41 | | | | |
| Data File: | 072017V1\1R425.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 | | 234 | 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 | | 2380 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 241 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 237 | 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 | | 234 | 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 | | 237 | 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

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834860 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PS | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 19:41 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 19:41 | | | | |
| Data File: | 072017V1\1R425.D | Column: | 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 | 49.0 | 50.0 | 98 | (71%-134%) |
| Bromofluorobenzene | 50.3 | 50.0 | 101 | (70%-131%) |
| Toluene-d8 | 49.3 | 50.0 | 99 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834861 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 19:12 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 19:12 | | | | |
| Data File: | 072017V1\1R424.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-----------------------------|-----------|--------|-------|---------|---------|
| 630-20-6 | 1,1,1,2-Tetrachloroethane | | 48.8 | ug/L | 0.300 | 1.00 |
| 71-55-6 | 1,1,1-Trichloroethane | | 43.3 | ug/L | 0.300 | 1.00 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | | 44.1 | ug/L | 0.300 | 1.00 |
| 79-00-5 | 1,1,2-Trichloroethane | | 46.1 | ug/L | 0.300 | 1.00 |
| 75-34-3 | 1,1-Dichloroethane | | 46.0 | ug/L | 0.300 | 1.00 |
| 75-35-4 | 1,1-Dichloroethylene | | 43.1 | ug/L | 0.300 | 1.00 |
| 563-58-6 | 1,1-Dichloropropene | | 41.7 | ug/L | 0.300 | 1.00 |
| 87-61-6 | 1,2,3-Trichlorobenzene | | 47.1 | ug/L | 0.300 | 1.00 |
| 96-18-4 | 1,2,3-Trichloropropane | | 47.3 | ug/L | 0.300 | 1.00 |
| 120-82-1 | 1,2,4-Trichlorobenzene | | 44.1 | 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 | | 43.6 | ug/L | 0.500 | 1.00 |
| 106-93-4 | 1,2-Dibromoethane | | 47.1 | ug/L | 0.300 | 1.00 |
| 95-50-1 | 1,2-Dichlorobenzene | | 44.0 | ug/L | 0.300 | 1.00 |
| 107-06-2 | 1,2-Dichloroethane | | 48.7 | ug/L | 0.300 | 1.00 |
| 78-87-5 | 1,2-Dichloropropane | | 45.3 | ug/L | 0.300 | 1.00 |
| 108-67-8 | 1,3,5-Trimethylbenzene | | 43.3 | ug/L | 0.300 | 1.00 |
| 541-73-1 | 1,3-Dichlorobenzene | | 43.0 | ug/L | 0.300 | 1.00 |
| 142-28-9 | 1,3-Dichloropropane | | 45.3 | ug/L | 0.300 | 1.00 |
| 106-46-7 | 1,4-Dichlorobenzene | | 44.1 | ug/L | 0.300 | 1.00 |
| 594-20-7 | 2,2-Dichloropropane | | 42.7 | ug/L | 0.300 | 1.00 |
| 78-93-3 | 2-Butanone | | 148 | 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 | | 44.4 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | | 166 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | | 43.1 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | | 43.1 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | | 205 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | | 130 | 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 | | 44.1 | ug/L | 0.300 | 1.00 |
| 108-86-1 | Bromobenzene | | 45.3 | ug/L | 0.300 | 1.00 |
| 74-97-5 | Bromochloromethane | | 47.5 | ug/L | 0.300 | 1.00 |
| 75-27-4 | Bromodichloromethane | | 48.9 | ug/L | 0.300 | 1.00 |
| 75-25-2 | Bromoform | | 49.3 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834861 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 19:12 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 19:12 | | | | |
| Data File: | 072017V1\1R424.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-------------|---------------------------|-----------|--------|-------|---------|---------|
| 74-83-9 | Bromomethane | | 46.3 | ug/L | 0.300 | 1.00 |
| 75-15-0 | Carbon disulfide | | 206 | ug/L | 1.50 | 5.00 |
| 56-23-5 | Carbon tetrachloride | | 44.5 | ug/L | 0.300 | 1.00 |
| 108-90-7 | Chlorobenzene | | 44.8 | ug/L | 0.300 | 1.00 |
| 75-00-3 | Chloroethane | | 43.1 | ug/L | 0.300 | 1.00 |
| 67-66-3 | Chloroform | | 46.6 | ug/L | 0.300 | 1.00 |
| 74-87-3 | Chloromethane | | 38.8 | ug/L | 0.300 | 1.00 |
| 124-48-1 | Dibromochloromethane | | 49.8 | ug/L | 0.300 | 1.00 |
| 74-95-3 | Dibromomethane | | 47.8 | ug/L | 0.300 | 1.00 |
| 75-71-8 | Dichlorodifluoromethane | | 34.7 | ug/L | 0.300 | 1.00 |
| 60-29-7 | Ethyl ether | | 47.2 | ug/L | 0.300 | 1.00 |
| 97-63-2 | Ethyl methacrylate | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-41-4 | Ethylbenzene | | 42.6 | ug/L | 0.300 | 1.00 |
| 87-68-3 | Hexachlorobutadiene | | 42.4 | ug/L | 0.300 | 1.00 |
| 74-88-4 | Iodomethane | | 225 | ug/L | 1.50 | 5.00 |
| 78-83-1 | Isobutyl alcohol | U | 50.0 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | | 42.1 | 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 | | 47.6 | ug/L | 0.300 | 1.00 |
| 107-12-0 | Propionitrile | U | 5.00 | ug/L | 1.50 | 5.00 |
| 100-42-5 | Styrene | | 45.2 | ug/L | 0.300 | 1.00 |
| 127-18-4 | Tetrachloroethylene | | 43.5 | ug/L | 0.300 | 1.00 |
| 108-88-3 | Toluene | | 41.5 | ug/L | 0.300 | 1.00 |
| 79-01-6 | Trichloroethylene | | 44.9 | ug/L | 0.300 | 1.00 |
| 75-69-4 | Trichlorofluoromethane | | 41.9 | ug/L | 0.300 | 1.00 |
| 76-13-1 | Trichlorotrifluoroethane | U | 5.00 | ug/L | 2.00 | 5.00 |
| 108-05-4 | Vinyl acetate | | 230 | ug/L | 1.50 | 5.00 |
| 75-01-4 | Vinyl chloride | | 39.5 | ug/L | 0.300 | 1.00 |
| 156-59-2 | cis-1,2-Dichloroethylene | | 47.2 | ug/L | 0.300 | 1.00 |
| 10061-01-5 | cis-1,3-Dichloropropylene | | 45.7 | ug/L | 0.300 | 1.00 |
| 179601-23-1 | m,p-Xylenes | | 86.8 | ug/L | 0.300 | 2.00 |
| 71-36-3 | n-Butyl alcohol | | 4520 | ug/L | 15.0 | 50.0 |
| 104-51-8 | n-Butylbenzene | | 41.1 | ug/L | 0.300 | 1.00 |
| 103-65-1 | n-Propylbenzene | | 41.0 | ug/L | 0.300 | 1.00 |
| 95-47-6 | o-Xylene | | 44.3 | ug/L | 0.300 | 1.00 |
| 135-98-8 | sec-Butylbenzene | | 42.2 | ug/L | 0.300 | 1.00 |

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834861 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 19:12 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 19:12 | | | | |
| Data File: | 072017V1\1R424.D | Column: | DB-624 | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|------------|-----------------------------|-----------|--------|-------|---------|---------|
| 1634-04-4 | tert-Butyl methyl ether | | 43.5 | ug/L | 0.300 | 1.00 |
| 98-06-6 | tert-Butylbenzene | | 44.3 | ug/L | 0.300 | 1.00 |
| 156-60-5 | trans-1,2-Dichloroethylene | | 45.6 | ug/L | 0.300 | 1.00 |
| 10061-02-6 | trans-1,3-Dichloropropylene | | 47.4 | ug/L | 0.300 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-----------|-------------------|
| 1,2-Dichloroethane-d4 | 50.2 | 50.0 | 100 | (71%-134%) |
| Bromofluorobenzene | 51.5 | 50.0 | 103 | (70%-131%) |
| Toluene-d8 | 48.9 | 50.0 | 98 | (74%-124%) |

**Volatile
Certificate of Analysis
Sample Summary**

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834862 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 20:10 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 20:10 | | | | |
| Data File: | 072017V1\1R426.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 | | 41.8 | ug/L | 0.300 | 1.00 |
| 95-49-8 | 2-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 591-78-6 | 2-Hexanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 106-43-4 | 4-Chlorotoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 99-87-6 | 4-Isopropyltoluene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 108-10-1 | 4-Methyl-2-pentanone | U | 5.00 | ug/L | 1.50 | 5.00 |
| 67-64-1 | Acetone | U | 10.0 | ug/L | 1.50 | 10.0 |
| 75-05-8 | Acetonitrile | U | 25.0 | ug/L | 8.00 | 25.0 |
| 107-02-8 | Acrolein | | 243 | ug/L | 1.50 | 5.00 |
| 107-13-1 | Acrylonitrile | | 219 | ug/L | 1.50 | 5.00 |
| 107-05-1 | Allyl chloride | | 233 | 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: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834862 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 20:10 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 20:10 | | | | |
| Data File: | 072017V1\1R426.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 | | 223 | 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 | | 2160 | ug/L | 15.0 | 50.0 |
| 98-82-8 | Isopropylbenzene | U | 1.00 | ug/L | 0.300 | 1.00 |
| 126-98-7 | Methacrylonitrile | | 227 | ug/L | 1.50 | 5.00 |
| 80-62-6 | Methyl methacrylate | | 225 | 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 | | 214 | 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 | | 230 | 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

| | | | | | |
|-----------------------|-----------------------------|------------------------|-------------------------|-------------------|--------------------|
| SDG Number: | 2017-1937 | Date Collected: | 07/11/2017 11:40 | Matrix: | W |
| Lab Sample ID: | 1203834862 | Date Received: | 07/13/2017 09:10 | | |
| Client Sample: | QC for batch 1683867 | Client: | ARSL004 | Project: | QC |
| Client ID: | CAPA-17-139151PSD | Method: | SW-846:8260B | SOP Ref: | GL-OA-E-038 |
| Batch ID: | 1683867 | Inst: | VOA1.I | Dilution: | 1 |
| Run Date: | 07/20/2017 20:10 | Analyst: | PXY1 | Purge Vol: | 5 mL |
| Prep Date: | 07/20/2017 20:10 | | | | |
| Data File: | 072017V1\1R426.D | Column: | 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 | 47.6 | 50.0 | 95 | (71%-134%) |
| Bromofluorobenzene | 50.2 | 50.0 | 100 | (70%-131%) |
| Toluene-d8 | 47.8 | 50.0 | 96 | (74%-124%) |