

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: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAPA-17-143005

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09/06/2017	OK	FIELD MATRIX:	WS	OK
TIME COLLECTED (HH:MM):	1056		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	Paj bel S&N Anch E Basin conf		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / <input checked="" type="radio"/> NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1/2 9/6/17	HCL	Y	MA

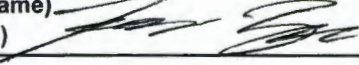
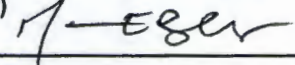
SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM

COLLECTED BY (PRINT): T. Bonham

RELINQUISHED BY (Printed Name) Tanner Bonham (Signature) 	Date/Time 9/6/17 1240	RECEIVED BY (Printed Name) MATT ENGLERT (Signature) 	Date/Time 9-6-17 1240
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143037

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09-06-17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:43		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	DG	
LOCATION ID:	R-68		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1 2	1/6/17 HCL	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time HH:MM

COLLECTED BY (PRINT):

K. Tour T. Vanderlits A. Vigil

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 9/6/17 11:45	RECEIVED BY (Printed Name) (Signature)	Sherwood <i>[Signature]</i>	Date/Time 9/6/17 11:45
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAPA-17-142952

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09/06/2017	OK	FIELD MATRIX:	WS	OK
TIME COLLECTED (HH:MM):	1056		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	PP	
LOCATION ID:	Paj bel S&N Anch E Basin conf		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM

COLLECTED BY (PRINT): A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 9/6/17 1240	RECEIVED BY (Printed Name) (Signature)	Date/Time 9-6-17 1240
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAPA-17-142953

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09/06/2017	OK	FIELD MATRIX:	WS	OK
TIME COLLECTED (HH:MM):	1056		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	PP	
LOCATION ID:	Paj bel S&N Anch E Basin conf		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	MA
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: MA

LOCATION COMMENTS: Conducted HE SPet test: Results Negative.

FIELD PARAMETERS:

PH(sv): 7.88 SC(mg/cm): 189.7 Turbidity(NTU): 2.3
 Sample Time 1056 HH:MM Temp(°C): 16.8 DO(mg/L): 6.43 Q(6PM): 17.95

COLLECTED BY (PRINT): A. Stanfield

RELINQUISHED BY (Printed Name) Allison Stanfield (Signature)	Date/Time 9/6/17 1240	RECEIVED BY MATT ENGUERT (Printed Name) (Signature)	Date/Time 9-6-17 1240
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143057

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:43		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-68		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
I	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE	I	I
I	WSP- NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	I	I

SAMPLE COMMENTS:

LOCATION COMMENTS:

DDH
09-06-17

FIELD PARAMETERS:

Sample Time _____ HH:MM

COLLECTED BY (PRINT): K. Taw, A. V. 7, T. VanderViz

RELINQUISHED BY (Printed Name) Tanya VanderViz (Signature) Tanya VanderViz	Date/Time 9-6-17 1145	RECEIVED BY (Printed Name) MATT ENGLERT (Signature) MATT ENGLERT	Date/Time 9-6-17 1145
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAPA-17-142958

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09/06/2017	OK	FIELD MATRIX:	WS	OK
TIME COLLECTED (HH:MM):	1056		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	Paj bel S&N Anch E Basin conf		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	FB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM

COLLECTED BY (PRINT): D. Scramble

RELINQUISHED BY (Printed Name) Daniel Scramble (Signature) [Signature]	Date/Time 9/6/17 1240	RECEIVED BY (Printed Name) MATT ENGELST (Signature) [Signature]	Date/Time 9-6-17 1240
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143059

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	09-06-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	10:43		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GS	
LOCATION ID:	R-68		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1000 500 ML POLY 9/6/17	1	HNO3	Y	NA
	WSP-8082-PCB	1 LITER AMBER GLASS	3	ICE		
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

Sampled 50' from running diesel generator

LOCATION COMMENTS:

None

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY**EVENT ID:** 11390**EVENT NAME:** Water/CdV (TA16 260) Q4 MY2017**SAMPLE ID:** CAWA-17-143059**WORK ORDER:****FIELD PARAMETERS:**

Sample Time 10:43 HH:MM
PH 7.42 SU DO 5.68 mg/L Q= 5.77 gpm
Temp 14.2°C Turb 5.52 NTU
SpC 113.5 µs/cm ORP 120.0 mV

COLLECTED BY (PRINT): K. Tow, T. Vander Vis, A. Vigil

RELINQUISHED BY (Printed Name) Tanya Vander Vis (Signature) <i>Tanya Vander Vis</i>	Date/Time 9-6-17 1145	RECEIVED BY (Printed Name) <i>MATI ENGERT</i> (Signature) <i>MATI ENGERT</i>	Date/Time 9-6-17 1145
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143061

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	09/06/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	0815		MEDIA:	UA	
PRS ID:	N/A		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-68		FIELD PREP:	UF	
LOCATION TYPE:	N/A		FIELD QC TYPE:	PEB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>(NA)</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-8082-PCB	1 LITER AMBER GLASS	2	ICE	Y	N/A
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-All Metals	1 LITER POLY	1	HNO3 ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP- NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

EVENT NAME: Water/CdV (TA16 260) Q4 MY2017

SAMPLE ID: CAWA-17-143061

WORK ORDER:

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM

COLLECTED BY (PRINT): A. VIGIL, D. HUGHES

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 09-06-17 11:45	RECEIVED BY (Printed Name) (Signature)	Date/Time 9/6/17 11:45
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/28/2017

coc: 2017-2708

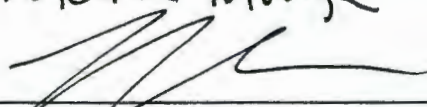
TEST - Field Screen		YES	NO	NA
The sample has field screening measurements of alpha activity and beta activity.			<input checked="" type="checkbox"/>	
Activity (dpm/100cm ²)	Sampled Location			
Alpha detectable and < 20,000	TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, TA-48, or TA-49			<input checked="" type="checkbox"/>
Alpha > 125 and < 20,000	other locations			
Beta > 1,500 and < 100,000	any location			
Alpha activity ≥ 20,000 dpm/100cm ² and beta activity ≥ 100,000 dpm/100cm ² and ≥ 0.5 mR/hr on the external surface of the package.				
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on field screening measurements of alpha and beta activity.				

TEST - Location		YES	NO	NA
Prior analytical measurements of radioactive isotopes are available.			<input checked="" type="checkbox"/>	
Activity (pCi/g)	Sampled Location			
<ul style="list-style-type: none"> Am-241 > 27 and < 27,000 Cs-137 > 270 and < 270,000 Pu-238 > 27 and < 27,000 Pu-239/240 > 27 and < 27,000 Th-228 > 27 and < 27,000, U-238 > 270 and < 270,000, H-3 > 27,000,000 and < 27,000,000,000 	The sampling location is within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-15, TA-35, TA-36, TA-39, TA-48 or TA-49.			<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> Am-241, Pu-238, Pu-239/240, or Th-228 ≥ 27,000 U-238 ≥ 270,000 H-3 ≥ 27,000,000,000 				
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on prior analytical measurements of radioactive isotopes.				

TEST - AK		YES	NO	NA
The shippers documented knowledge of the sample positively identifies appropriate labeling.				<input checked="" type="checkbox"/>
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , and the sample is submitted to ARS or RP for hazard classification analysis.				<input checked="" type="checkbox"/>

HOLD SAMPLES FOR ANALYSIS
The sampling location within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-35, TA-15, TA-36, TA-39, TA-48 or TA-49 AND does not have usable field screening measurements of alpha and beta activity available AND the sampling location or related sampling location(s) do not have prior reliable analytical measurements of radioactive isotopes available AND knowledge of the sample is not acceptable to identify appropriate labeling.

These samples do not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200. The sample(s) contained in this shipment have been assigned a tentative proper DOT shipping name, hazard class, identification number, and packing group, based on the shipper's knowledge of the sample:

Hazard Assessment Completed By:	Date/Time
(Printed Name) <u>Melissa Mark</u>	9/7/17 3:00
(Signature) 	

DATA VALIDATION REPORT

Chain Of Custody No. 2017-2708

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
432512	EPA:120.1	2				
432512	EPA:150.1	2				
432512	EPA:160.1	2				
432512	EPA:170.0	4		2	1	
432512	EPA:245.2	4				
432512	EPA:300.0	2				
432512	EPA:310.1	2				
432512	EPA:335.4	2				
432512	EPA:350.1	2				
432512	EPA:351.2	2				
432512	EPA:353.2	2				
432512	EPA:365.4	2				
432512	EPA:900	1				
432512	EPA:901.1	1				
432512	EPA:905.0	1				
432512	HASL-300:AM-241	1				
432512	HASL-300:ISOPU	1				
432512	HASL-300:ISOU	1				
432512	SM:A2340B	3				
432512	SW-846:6010C	3				
432512	SW-846:6020	3				
432512	SW-846:6850	2				
432512	SW-846:8082	1				
432512	SW-846:8260B	2		2	1	
432512	SW-846:8270D	1				
432512	SW-846:8330B	2				
432512	SW-846:9060	2				

DATA VALIDATION REPORT

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
432512	EPA:120.1	1703142	1703142	2										1			1				
432512	EPA:150.1	1699927	1699927	2										1			1				
432512	EPA:160.1	1700092	1700092	2					1					1			1				
432512	EPA:170.0	NA	NA	4		2	1														
432512	EPA:245.2	1702200	1702198	4					1	1				1			1				
432512	EPA:300.0	1700336	1700336	2					1					1			1				
432512	EPA:310.1	1699923	1699923	2						1				1			1				
432512	EPA:335.4	1698825	1698824	2					1	1				1			1				
432512	EPA:350.1	1699978	1699976	2					1	1	1			1			1				
432512	EPA:351.2	1699984	1699983	2					1	1				1			1				
432512	EPA:353.2	1700075	1700075	2					1					1			1				
432512	EPA:365.4	1699982	1699979	2					1	1	1			1			1				
432512	EPA:900	1701372	1701372	1					1	1	1			1			1				
432512	EPA:901.1	1701094	1701094	1					1					1			1				
432512	EPA:905.0	1701506	1701506	1					1	1				1			1				
432512	HASL-300:AM-241	1699914	1699914	1					1					1			1				
432512	HASL-300:ISOPU	1699915	1699915	1					1					1			1				
432512	HASL-300:ISOU	1706340	1706340	1					1					1			1				
432512	SM:A2340B	1706554	1706554	3																	
432512	SW-846:6010C	1699801	1699800	3					1	1				1			1				
432512	SW-846:6020	1699792	1699791	3					1	1				1			1				
432512	SW-846:6850	1699857	1699856	2					1	1	1			1							
432512	SW-846:8082	1701042	1701040	1					1	1	1			1							
432512	SW-846:8260B	1700295	1700295	1		2	1		2					4							
432512	SW-846:8260B	1701572	1701572	1					2					4							
432512	SW-846:8270D	1699759	1699758	1					1	1	1			1							
432512	SW-846:8270D	1701047	1701046						1	1	1			1	1						
432512	SW-846:8330B	1699848	1699847	2					1	1	1			1							
432512	SW-846:9060	1699918	1699918	2					1					1			1				

DATA VALIDATION REPORT

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:120.1	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-142886	1203881179	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203881177	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CrIN1-17-145287	1203873074	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203873073	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-17-142952	1203873723	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203873722	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203873721	MB	1	0	0	0
EPA:170.0	VOC	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:170.0	VOC	CAPA-17-142953	432512002	REG	1	0	0	0
EPA:170.0	VOC	CAPA-17-142958	432512003	FB	1	0	0	0
EPA:170.0	VOC	CAPA-17-143005	432512004	FTB	1	0	0	0
EPA:170.0	VOC	CAWA-17-143037	432512005	FTB	1	0	0	0
EPA:170.0	VOC	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-143059	432512007	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-143061	432512010	PEB	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142953	432512002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-143059	432512009	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203878929	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203878928	MB	1	0	0	0
EPA:245.2	INORGANIC	WT_SIP-17-135650	1203878930	DUP	1	0	0	0
EPA:245.2	INORGANIC	WT_SIP-17-135650	1203878931	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-142886	1203874286	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203874285	LCS	0	0	4	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:300.0	GENERAL CHEMISTRY	MB	1203874284	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CrIN1-17-145287	1203873070	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CrIN1-17-145287	1203873072	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203873067	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAPA-17-142953	432512002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142892	1203870421	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142892	1203870422	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-143059	432512009	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203870420	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203870419	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-142886	1203873246	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-142886	1203873250	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-142886	1203873252	MSD	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203873243	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203873242	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-17-142953	432512002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-142921	1203873270	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-142921	1203873273	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-143059	432512009	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203873269	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203873268	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CTUA-17-142752	1203873616	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203873615	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203873614	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-17-142952	432512001	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142886	1203873260	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142886	1203873262	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142886	1203873263	MSD	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-143057	432512006	REG	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203873258	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203873257	MB	1	0	0	0
EPA:900	RAD	CAWA-17-143059	1203876912	DUP	2	0	0	0
EPA:900	RAD	CAWA-17-143059	1203876913	MS	0	0	2	0
EPA:900	RAD	CAWA-17-143059	1203876914	MSD	0	0	2	0
EPA:900	RAD	CAWA-17-143059	432512009	REG	2	0	0	0
EPA:900	RAD	CAWA-17-143061	432512012	PEB	2	0	0	0
EPA:900	RAD	LCS	1203876915	LCS	0	0	2	0
EPA:900	RAD	MB	1203876911	MB	2	0	0	0
EPA:901.1	RAD	CAWA-17-143059	1203876225	DUP	5	0	0	0
EPA:901.1	RAD	CAWA-17-143059	432512009	REG	5	0	0	0
EPA:901.1	RAD	CAWA-17-143061	432512012	PEB	5	0	0	0
EPA:901.1	RAD	LCS	1203876226	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203876224	MB	5	0	0	0
EPA:905.0	RAD	CAWA-17-143059	432512009	REG	1	0	0	0
EPA:905.0	RAD	CAWA-17-143061	1203877337	DUP	1	0	0	0
EPA:905.0	RAD	CAWA-17-143061	1203877338	MS	0	0	1	0
EPA:905.0	RAD	CAWA-17-143061	432512012	PEB	1	0	0	0
EPA:905.0	RAD	LCS	1203877339	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203877336	MB	1	0	0	0
HASL-300:AM-241	RAD	CAWA-17-143059	1203872996	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAWA-17-143059	432512009	REG	1	0	0	0
HASL-300:AM-241	RAD	CAWA-17-143061	432512012	PEB	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203872997	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203872995	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAWA-17-143059	1203873005	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAWA-17-143059	432512009	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAWA-17-143061	432512012	PEB	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203873006	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203873004	MB	2	0	0	0
HASL-300:ISOU	RAD	CAWA-17-143059	432512009	REG	3	0	0	0
HASL-300:ISOU	RAD	CAWA-17-143061	432512012	PEB	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203888615	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203888613	MB	3	0	0	0
HASL-300:ISOU	RAD	WT_SIP-17-135650	1203888614	DUP	3	0	0	0
SM:A2340B	INORGANIC	CAPA-17-142952	432512001	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPA-17-142953	432512002	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-143057	432512006	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-143061	432512012	PEB	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6010C	INORGANIC	CAPA-17-142952	1203872731	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAPA-17-142952	1203872732	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAPA-17-142952	432512001	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAPA-17-142953	432512002	REG	16	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-143057	432512006	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-143061	432512012	PEB	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203872730	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203872729	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPA-17-142952	1203872708	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPA-17-142952	1203872709	MS	0	0	11	0
SW-846:6020	INORGANIC	CAPA-17-142952	432512001	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-17-142953	432512002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-143057	432512006	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-143061	432512012	PEB	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203872707	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203872706	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142952	1203872839	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142952	1203872840	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142952	432512001	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-143057	432512006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-143061	432512012	PEB	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203872838	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203872837	MB	1	0	0	0
SW-846:8082	PESTPCB	CAWA-17-143059	1203877911	MS	0	2	2	0
SW-846:8082	PESTPCB	CAWA-17-143059	1203877912	MSD	0	2	2	0
SW-846:8082	PESTPCB	CAWA-17-143059	432512007	REG	8	2	0	0
SW-846:8082	PESTPCB	CAWA-17-143061	432512010	PEB	8	2	0	0
SW-846:8082	PESTPCB	LCS	1203876047	LCS	0	2	2	0
SW-846:8082	PESTPCB	MB	1203876046	MB	8	2	0	0
SW-846:8260B	VOC	CAPA-17-142953	432512002	REG	80	3	0	0
SW-846:8260B	VOC	CAPA-17-142958	432512003	FB	80	3	0	0
SW-846:8260B	VOC	CAPA-17-143005	432512004	FTB	80	3	0	0
SW-846:8260B	VOC	CAWA-17-143037	432512005	FTB	80	3	0	0
SW-846:8260B	VOC	CAWA-17-143059	432512008	REG	80	3	0	0
SW-846:8260B	VOC	CAWA-17-143061	432512011	PEB	80	3	0	0
SW-846:8260B	VOC	LCS	1203874200	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203874201	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203874202	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203874203	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203877501	LCS	0	3	70	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8260B	VOC	LCS	1203877502	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203878617	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203878618	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203874198	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203874199	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203877500	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203878616	MB	80	3	0	0
SW-846:8270D	SVOC	CAWA-17-142918	1203876072	MS	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-142918	1203876073	MSD	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-143059	1203872660	MS	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-143059	1203872661	MSD	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-143059	432512008	REG	80	6	0	0
SW-846:8270D	SVOC	CAWA-17-143061	432512011	PEB	160	12	0	0
SW-846:8270D	SVOC	LCS	1203872659	LCS	0	6	76	0
SW-846:8270D	SVOC	LCS	1203876066	LCS	0	6	76	0
SW-846:8270D	SVOC	LCSD	1203877908	LCSD	0	6	76	0
SW-846:8270D	SVOC	MB	1203872658	MB	80	6	0	0
SW-846:8270D	SVOC	MB	1203876065	MB	80	6	0	0
SW-846:8330B	LCMS/MS HIGH	CAPA-17-142953	1203872819	MS	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	CAPA-17-142953	1203872820	MSD	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	CAPA-17-142953	432512002	REG	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-143059	432512009	REG	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-143061	432512012	PEB	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	LCS	1203872818	LCS	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	MB	1203872817	MB	23	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-17-142953	432512002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-142921	1203873016	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-143059	432512009	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-143061	432512012	PEB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203873015	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203873014	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

DATA VALIDATION REPORT

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203872729	METHOD BLANK	SW-846:6010C	W	Sodium	118	J	ug/L	300
MB	1203873242	METHOD BLANK	EPA:350.1	W	Ammonia as Nitrogen	0.0304	J	mg/L	0.050
CAPA-17-142958	432512003	FIELD BLANK	EPA:170.0	W	Temperature	3		Deg C	
CAWA-17-143037	432512005	TRIP BLANK	EPA:170.0	W	Temperature	3		Deg C	

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAPA-17-142952	1203873242	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0304	mg/L	0.121		0.050	Y	5	100	Y
CAWA-17-143057	1203873242	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0304	mg/L	0.0587		0.050	Y	5	100	Y
CAWA-17-143061	1203873242	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0304	mg/L	0.0769		0.050	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

Field Sample ID	Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Spike Recovery	Upper Limit	Lower Limit	Rejection Limit
CAWA-17-143059	1203872660	SW-846:8270D	Fluorophenol[2-]	1699759	09-13-2017	97	88	15	
CAWA-17-143059	1203872661	SW-846:8270D	Fluorophenol[2-]	1699759	09-13-2017	122	88	15	
CAWA-17-143059	1203872661	SW-846:8270D	Phenol-d5	1699759	09-13-2017	93	91	15	

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

DATA VALIDATION REPORT

Field Sample ID	MS Lab Sample ID	MSD Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS Spike Recovery	MSD Spike Recovery	MS Upper Limit	MS Lower Limit	MS Reject Limit	RPD	RPD Limit
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Aniline	1699758	09-13-2017	W	118	140	113	37		17	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Benzyl Alcohol	1699758	09-13-2017	W	121	152	116	37		22	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Bis(2-chloroethyl)ether	1699758	09-13-2017	W	115	145	114	39		23	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Chlorophenol[2-]	1699758	09-13-2017	W	112	145	108	37		26	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Dichlorobenzene[1,2-]	1699758	09-13-2017	W	90	109	99	28		20	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Dichlorobenzene[1,3-]	1699758	09-13-2017	W	83	101	97	27		20	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Dichlorobenzene[1,4-]	1699758	09-13-2017	W	85	104	97	28		20	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Dioxane[1,4-]	1699758	09-13-2017	W	106	127	110	24		18	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Hexachloroethane	1699758	09-13-2017	W	82	98	94	29		17	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Methylphenol[2-]	1699758	09-13-2017	W	113	144	109	34		24	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Methylphenol[3-,4-]	1699758	09-13-2017	W	130	162	120	36		22	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Nitroso-di-n-propylamine[N-]	1699758	09-13-2017	W	136	170	118	42		22	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Nitrosodimethylamine[N-]	1699758	09-13-2017	W	96	120	106	25		22	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Nitrosopyrrolidine[N-]	1699758	09-13-2017	W	126	158	119	47		23	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Oxybis(1-chloropropane)[2,2'-]	1699758	09-13-2017	W	121	152	127	32		23	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Phenol	1699758	09-13-2017	W	87	104	82	23		18	30
CAWA-17-143059	1203872660	1203872661	SW-846:8270D	Pyridine	1699758	09-13-2017	W	105	124	93	24		17	30

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

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203876066	1203877908	SW-846:8270D	Aniline	1701046	09-19-2017	W	120	119	112	49			1	30
1203876066	1203877908	SW-846:8270D	Benzidine	1701046	09-19-2017	W	111	72	144	20			43	30
1203876066	1203877908	SW-846:8270D	Benzyl Alcohol	1701046	09-19-2017	W	104	108	102	44			4	30

DATA VALIDATION REPORT

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203876066	1203877908	SW-846:8270D	Bis(2-chloroethyl)ether	1701046	09-19-2017	W	130	126	111	51			3	30
1203876066	1203877908	SW-846:8270D	Chloro-3-methylphenol[4-]	1701046	09-19-2017	W	123	115	115	55			7	30
1203876066	1203877908	SW-846:8270D	Chlorophenol[2-]	1701046	09-19-2017	W	124	118	105	49			5	30
1203876066	1203877908	SW-846:8270D	Dioxane[1,4-]	1701046	09-19-2017	W	79	77	78	38			2	30
1203876066	1203877908	SW-846:8270D	Fluoranthene	1701046	09-19-2017	W	120	105	118	54			13	30
1203876066	1203877908	SW-846:8270D	Methylphenol[2-]	1701046	09-19-2017	W	106	104	101	41			2	30
1203876066	1203877908	SW-846:8270D	Methylphenol[3-,4-]	1701046	09-19-2017	W	113	112	102	43			1	30
1203876066	1203877908	SW-846:8270D	Nitroso-di-n-propylamine[N-]	1701046	09-19-2017	W	143	140	115	54			2	30
1203876066	1203877908	SW-846:8270D	Nitrosopyrrolidine[N-]	1701046	09-19-2017	W	126	125	113	54			1	30
1203876066	1203877908	SW-846:8270D	Oxybis(1-chloropropane)[2,2'-]	1701046	09-19-2017	W	124	121	123	44			2	30
1203876066	1203877908	SW-846:8270D	Pentachlorophenol	1701046	09-19-2017	W	121	118	116	41			3	30

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

Field Sample ID	Lab Sample ID	LD Lab Sample ID	Analytical Method	Parameter Name	Sample Matrix	Lab Result	LD Lab Result	Lab Units	Detect Flag	LD Detect Flag	RPD	RPD Limit
CAPA-17-142952	432512001	1203873723	EPA:160.1	Total Dissolved	W	266	129	mg/L	Y	Y	71.4	5

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

DATA VALIDATION REPORT

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
Paj bel S&N Anch E Basin	2017-2708	CAPA-17-142952	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.121	mg/L	0.121	mg/L			W	09/06/2017		1699978	VAL	Y
R-68	2017-2708	CAWA-17-143057	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.0587	mg/L	0.0587	mg/L			W	09/06/2017		1699978	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	0.0181	pCi/L	0.0181	pCi/L	0.053	0.027	W	09/06/2017		1699914	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	-0.242	pCi/L	-0.242	pCi/L	4.73	1.28	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	-0.666	pCi/L	-0.666	pCi/L	5.38	1.38	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	0.887	pCi/L	0.887	pCi/L	2.70	0.778	W	09/06/2017		1701372	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-2.02	pCi/L	-2.02	pCi/L	8.35	2.37	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-0.00251	pCi/L	-0.00251	pCi/L	0.0435	0.00561	W	09/06/2017		1699915	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	0.015	pCi/L	0.015	pCi/L	0.0564	0.00938	W	09/06/2017		1699915	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5a	N	55.2	pCi/L	55.2	pCi/L	43.3	28.6	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-1.84	pCi/L	-1.84	pCi/L	4.57	1.38	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	-0.0021	pCi/L	-0.0021	pCi/L	0.481	0.129	W	09/06/2017		1701506	VAL	Y
R-68	2017-2708	CAWA-17-143059	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	0.0569	pCi/L	0.0569	pCi/L	0.0741	0.0172	W	09/06/2017		1706340	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	0.00984	pCi/L	0.00984	pCi/L	0.0431	0.00778	W	09/06/2017		1699914	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	I4	N	0.0769	mg/L	0.0769	mg/L			W	09/06/2017		1699978	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	1.98	pCi/L	1.98	pCi/L	5.31	1.22	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	0.199	pCi/L	0.199	pCi/L	6.78	1.79	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	0.241	pCi/L	0.241	pCi/L	1.92	0.468	W	09/06/2017		1701372	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	0.483	pCi/L	0.483	pCi/L	9.27	2.51	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-0.00000000	pCi/L	-0.000000004	pCi/L	0.0376	0.0111	W	09/06/2017		1699915	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	-0.00000000	pCi/L	-0.000000002	pCi/L	0.0487	0.0092	W	09/06/2017		1699915	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	-18.1	pCi/L	-18.1	pCi/L	64.4	18.4	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-1.16	pCi/L	-1.16	pCi/L	5.31	1.51	W	09/06/2017		1701094	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	0.483	pCi/L	0.483	pCi/L	0.493	0.158	W	09/06/2017		1701506	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:ISOU	Uranium-234	U	U	R5	N	0.0755	pCi/L	0.0755	pCi/L	0.0875	0.0203	W	09/06/2017		1706340	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	0.00647	pCi/L	0.00647	pCi/L	0.0933	0.0111	W	09/06/2017		1706340	VAL	Y
R-68	2017-2708	CAWA-17-143061	PEB	INIT	RAD	HASL-300:ISOU	Uranium-238	U	U	R5	N	0.0287	pCi/L	0.0287	pCi/L	0.0847	0.0153	W	09/06/2017		1706340	VAL	Y

Reason Code

Description

I4

the sample result is =<5x the concentration of related analyte in the method blank.

DATA VALIDATION REPORT

Reason Code

Description

J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualify. The analyte is detected in the sample.
R5	Analyte is not detected because the amount reported is less than the MDC.
R5a	The analyte should be regarded as rejected because spectral interferences prevent positive identification of the analytes.
U_LAB	The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:120.1	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:150.1	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:160.1	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:170.0	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:245.2	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:300.0	0	4
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:310.1	0	2
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:350.1	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:353.2	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	EPA:365.4	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	SM:A2340B	0	1
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	SW-846:6010C	0	17
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	SW-846:6020	0	11
CAPA-17-142952	Paj bel S&N Anch E Basin	REG	SW-846:6850	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	EPA:170.0	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	EPA:245.2	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	EPA:335.4	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	EPA:351.2	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SM:A2340B	0	1
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SW-846:6010C	0	16
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SW-846:6020	0	11
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SW-846:8260B	0	80
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SW-846:8330B	0	23
CAPA-17-142953	Paj bel S&N Anch E Basin	REG	SW-846:9060	0	1
CAPA-17-142958	Paj bel S&N Anch E Basin	FB	EPA:170.0	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-142958	Paj bel S&N Anch E Basin	FB	SW-846:8260B	0	80
CAPA-17-143005	Paj bel S&N Anch E Basin	FTB	EPA:170.0	0	1
CAPA-17-143005	Paj bel S&N Anch E Basin	FTB	SW-846:8260B	0	80
CAWA-17-143037	R-68	FTB	EPA:170.0	0	1
CAWA-17-143037	R-68	FTB	SW-846:8260B	0	80
CAWA-17-143057	R-68	REG	EPA:120.1	0	1
CAWA-17-143057	R-68	REG	EPA:150.1	0	1
CAWA-17-143057	R-68	REG	EPA:160.1	0	1
CAWA-17-143057	R-68	REG	EPA:170.0	0	1
CAWA-17-143057	R-68	REG	EPA:245.2	0	1
CAWA-17-143057	R-68	REG	EPA:300.0	0	4
CAWA-17-143057	R-68	REG	EPA:310.1	0	2
CAWA-17-143057	R-68	REG	EPA:350.1	0	1
CAWA-17-143057	R-68	REG	EPA:353.2	0	1
CAWA-17-143057	R-68	REG	EPA:365.4	0	1
CAWA-17-143057	R-68	REG	SM:A2340B	0	1
CAWA-17-143057	R-68	REG	SW-846:6010C	0	17
CAWA-17-143057	R-68	REG	SW-846:6020	0	11
CAWA-17-143057	R-68	REG	SW-846:6850	0	1
CAWA-17-143059	R-68	REG	EPA:170.0	0	1
CAWA-17-143059	R-68	REG	EPA:245.2	0	1
CAWA-17-143059	R-68	REG	EPA:335.4	0	1
CAWA-17-143059	R-68	REG	EPA:351.2	0	1
CAWA-17-143059	R-68	REG	EPA:900	0	2
CAWA-17-143059	R-68	REG	EPA:901.1	0	5
CAWA-17-143059	R-68	REG	EPA:905.0	0	1
CAWA-17-143059	R-68	REG	HASL-300:AM-241	0	1
CAWA-17-143059	R-68	REG	HASL-300:ISOPU	0	2
CAWA-17-143059	R-68	REG	HASL-300:ISOU	0	3
CAWA-17-143059	R-68	REG	SW-846:8082	0	8
CAWA-17-143059	R-68	REG	SW-846:8260B	0	80
CAWA-17-143059	R-68	REG	SW-846:8270D	0	80
CAWA-17-143059	R-68	REG	SW-846:8330B	0	23
CAWA-17-143059	R-68	REG	SW-846:9060	0	1
CAWA-17-143061	R-68	PEB	EPA:120.1	0	1
CAWA-17-143061	R-68	PEB	EPA:150.1	0	1
CAWA-17-143061	R-68	PEB	EPA:160.1	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-143061	R-68	PEB	EPA:170.0	0	1
CAWA-17-143061	R-68	PEB	EPA:245.2	0	1
CAWA-17-143061	R-68	PEB	EPA:300.0	0	4
CAWA-17-143061	R-68	PEB	EPA:310.1	0	2
CAWA-17-143061	R-68	PEB	EPA:335.4	0	1
CAWA-17-143061	R-68	PEB	EPA:350.1	0	1
CAWA-17-143061	R-68	PEB	EPA:351.2	0	1
CAWA-17-143061	R-68	PEB	EPA:353.2	0	1
CAWA-17-143061	R-68	PEB	EPA:365.4	0	1
CAWA-17-143061	R-68	PEB	EPA:900	0	2
CAWA-17-143061	R-68	PEB	EPA:901.1	0	5
CAWA-17-143061	R-68	PEB	EPA:905.0	0	1
CAWA-17-143061	R-68	PEB	HASL-300:AM-241	0	1
CAWA-17-143061	R-68	PEB	HASL-300:ISOPU	0	2
CAWA-17-143061	R-68	PEB	HASL-300:ISOU	0	3
CAWA-17-143061	R-68	PEB	SM:A2340B	0	1
CAWA-17-143061	R-68	PEB	SW-846:6010C	0	17
CAWA-17-143061	R-68	PEB	SW-846:6020	0	11
CAWA-17-143061	R-68	PEB	SW-846:6850	0	1
CAWA-17-143061	R-68	PEB	SW-846:8082	0	8
CAWA-17-143061	R-68	PEB	SW-846:8260B	0	80
CAWA-17-143061	R-68	PEB	SW-846:8270D	0	160
CAWA-17-143061	R-68	PEB	SW-846:8330B	0	23
CAWA-17-143061	R-68	PEB	SW-846:9060	0	1



September 19, 2017

gel.com

Ms. Nita Patel
Los Alamos National Laboratory
TA-00, SM1237, Rm104C
Los Alamos, New Mexico 87545

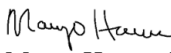
Re: LANL- WQH Water Samples
Work Order: 432512
SDG: 2017-2708

Dear Ms. Patel:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on September 08, 2017, and analyzed for Explosives by LCMSMS, GC Semivolatile PCB, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. 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: 2017-2708
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 432512
SDG: 2017-2708

Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	5
Data Review Qualifier Flag Definition Sheet.....	11
Volatile Analysis.....	14
Case Narrative.....	15
Sample Data Summary.....	21
Quality Control Summary.....	40
Quality Control Data.....	87
Semi-Volatile Analysis.....	148
Case Narrative.....	149
Sample Data Summary.....	158
Quality Control Summary.....	168
Quality Control Data.....	200
Perchlorates by LCMSMS Analysis.....	228
Case Narrative.....	229
Sample Data Summary.....	235
Quality Control Summary.....	239
Quality Control Data.....	242
Explosives by LCMSMS Analysis.....	248
Case Narrative.....	249

Sample Data Summary.....	254
Quality Control Summary.....	262
Quality Control Data.....	266
PCB Analysis.....	287
Case Narrative.....	288
Sample Data Summary.....	293
Quality Control Summary.....	296
Quality Control Data.....	302
Metals Analysis.....	307
Case Narrative.....	308
Sample Data Summary.....	314
Quality Control Summary.....	328
General Chem Analysis.....	342
Case Narrative.....	343
Sample Data Summary.....	373
Quality Control Summary.....	382
Radiological Analysis.....	389
Case Narrative.....	390
Sample Data Summary.....	404
Quality Control Summary.....	409

Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 432512
SDG # : 2017-2708**

September 19, 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 September 08, 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>
432512001	CAPA-17-142952
432512002	CAPA-17-142953
432512003	CAPA-17-142958
432512004	CAPA-17-143005
432512005	CAWA-17-143037
432512006	CAWA-17-143057
432512007	CAWA-17-143059
432512008	CAWA-17-143059
432512009	CAWA-17-143059
432512010	CAWA-17-143061
432512011	CAWA-17-143061
432512012	CAWA-17-143061

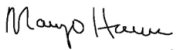
Case Narrative

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: Explosives by LCMSMS, GC Semivolatile PCB, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry.

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 19 September 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	SC000122018-1
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
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-23
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation

COC: 2017-2708

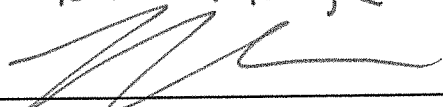
TEST - Field Screen		YES	NO	NA
The sample has field screening measurements of alpha activity and beta activity.			X	
Activity (dpm/100cm ²)	Sampled Location			
Alpha detectable and < 20,000	TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, TA-48, or TA-49			X
Alpha > 125 and < 20,000	other locations			
Beta > 1,500 and < 100,000	any location			
Alpha activity \geq 20,000 dpm/100cm ² and beta activity \geq 100,000 dpm/100cm ² and \geq 0.5 mR/hr on the external surface of the package.				
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on field screening measurements of alpha and beta activity.				

TEST - Location		YES	NO	NA
Prior analytical measurements of radioactive isotopes are available.			X	
Activity (pCi/g)	Sampled Location			
<ul style="list-style-type: none"> Am-241 > 27 and < 27,000 Cs-137 > 270 and < 270,000 Pu-238 > 27 and < 27,000 Pu-239/240 > 27 and < 27,000 Th-228 > 27 and < 27,000, U-238 > 270 and < 270,000, H-3 > 27,000,000 and < 27,000,000,000 	The sampling location is within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-15, TA-35, TA-36, TA-39, TA-48 or TA-49.			X
<ul style="list-style-type: none"> Am-241, Pu-238, Pu-239/240, or Th-228 \geq 27,000 U-238 \geq 270,000 H-3 \geq 27,000,000,000 				
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , based on prior analytical measurements of radioactive isotopes.				

TEST - AK		YES	NO	NA
The shippers documented knowledge of the sample positively identifies appropriate labeling.				X
The sample is tentatively identified as DOT hazard Class 7 (Radioactive). The shipment is labeled <i>Radioactive Material, Excepted Package - Limited Quantity of Material - UN2910</i> , and the sample is submitted to ARS or RP for hazard classification analysis.				X

HOLD SAMPLES FOR ANALYSIS
The sampling location within TA-1 and adjacent hillsides, TA-21, Acid Canyon, MDA C at TA-50, Area G at TA-54, Sediment/Soil from Effluent Canyon, Mortandad Canyon from Effluent Canyon to the Soil Contamination Area near the sediment traps, Bayo Canyon at TA-10, TA-35, TA-15, TA-36, TA-39, TA-48 or TA-49 AND does not have usable field screening measurements of alpha and beta activity available AND the sampling location or related sampling location(s) do not have prior reliable analytical measurements of radioactive isotopes available AND knowledge of the sample is not acceptable to identify appropriate labeling.

These samples do not meet the criteria for classification in any hazard class according to regulation OSHA 29 CFR 1910.1200. The sample(s) contained in this shipment have been assigned a tentative proper DOT shipping name, hazard class, identification number, and packing group, based on the shipper's knowledge of the sample:

Hazard Assessment Completed By:	Date/Time
(Printed Name) <u>Melissa Montoya</u>	9/7/17 3:40
(Signature) 	



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>ESHL</u>		SDG/AR/COC/Work Order: <u>432512</u>	
Received By: <u>ZKW</u>		Date Received: <u>9/8/17</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>59081782 6961-4C</u> <u>59081782 6950-5C</u> <u>59081782 6940-4C</u> <u>59081782 6939-3C</u> <u>59081782 6928-4C</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	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?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____	
Sample Receipt Criteria		Comments/Qualifiers (Required for Non-Conforming Items)	
1	Shipping containers received intact and sealed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Preservation Method: Wet Ice <u>Ice Packs</u> Dry ice None Other: _____ *all temperatures are recorded in Celsius <u>TEMP: Above</u>
4	Daily check performed and passed on IR temperature gun?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes _____ No _____ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes _____ No _____ N/A _____ (If unknown, select No) VOA vials free of headspace? Yes _____ No _____ N/A _____ Sample ID's and containers affected: _____
8	Samples received within holding time?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Sample ID's and containers affected: _____
10	Date & time on COC match date & time on bottles?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Sample ID's affected: <u>Collect Time on Non-Samples is 10:26</u>
11	Number of containers received match number indicated on COC?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Sample ID's affected: <u>We didn't receive a CA cont. for -135650</u>
12	Are sample containers identifiable as GEL provided?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Comments (Use Continuation Form if needed): <u>* We need 2 cont. for Cr(VI)-17-145287 collect - 1 9/6 @ 1502 for Metals and Perchlorate not on COC</u>			

PM (or PMA) review: Initials MEHDate 9/8/17Page 1 of 1

GL-CHL-SR-001 Rev 5

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

SHIP DATE: 07SEP17
ACTWGT: 56.0 LB MAN
CAD: 0014176/CAFE2916

LOS ALAMOS, NM 87545
UNITED STATES US

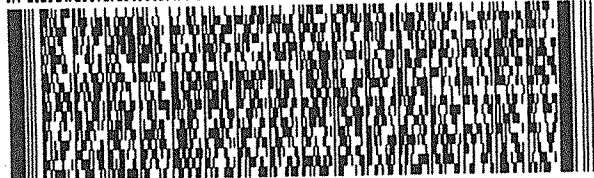
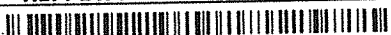
BILL SENDER

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

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRGW04BAGWE0



FedEx
Express



TRK# 5908 1782 6961
0201

FRI - 08 SEP 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

34 RIT2 EXP 02/18 ***



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: 07SEP17
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2916

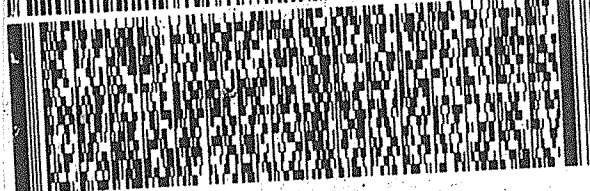
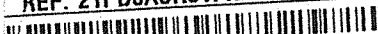
BILL SENDER

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

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRSW12CHWC00



FedEx
Express



1 of 2
TRK# 5908 1782 6928
0201
MASTER

FRI - 08 SEP 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS



34 RIT2 EXP 02/18 ***



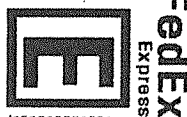
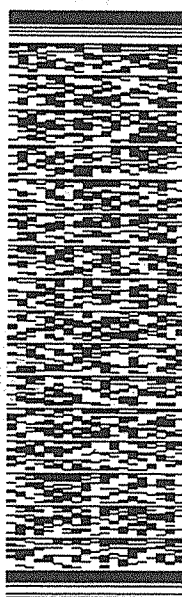
X7 RBWA

29407
SC-US CHS

MPS# 5908 1782 6939
0263
Met# 5908 1782 6928

0201

FRI - 08 SEP 10:30A
PRIORITY OVERNIGHT



(843) 666-8171
REF: 21PD0ASRSW12CHWC00

TO **VALERIE DAVIS**
GENERAL ENGINEERING LAB
2040 SAVAGE RD
CHARLESTON SC 29407

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: 07SEP17
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

Handwritten signature

ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
T800 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 07SEP17
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0ASRGW04BAGWE0

FedEx
Express



FRI - 08 SEP 10:30A
PRIORITY OVERNIGHT

1 of 2
TRK# 5908 1782 6940
0201
MASTER

X7 RBWA

29407
SC-US
CHS



434 RIT2 EXP 02/18

RIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
T800 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 07SEP17
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0ASRGW04BAGWE0

FedEx
Express



FRI - 08 SEP 10:30A
PRIORITY OVERNIGHT

2 of 2
MPS# 5908 1782 6950
0263
Mistr# 5908 1782 6940
0201

X7 RBWA

29407
SC-US
CHS



434 RIT2 EXP 02/18

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 #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1700295 1701572

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
432512002	CAPA-17-142953
432512003	CAPA-17-142958
432512004	CAPA-17-143005
432512005	CAWA-17-143037
432512008	CAWA-17-143059
432512011	CAWA-17-143061
1203874198	Method Blank (MB)
1203874199	Method Blank (MB)
1203874200	Laboratory Control Sample (LCS)
1203874201	Laboratory Control Sample (LCS)
1203874202	Laboratory Control Sample (LCS)
1203874203	Laboratory Control Sample (LCS)
1203874204	432512002(CAPA-17-142953) Post Spike (PS)
1203874205	432512002(CAPA-17-142953) Post Spike (PS)
1203874206	432512002(CAPA-17-142953) Post Spike Duplicate (PSD)
1203874207	432512002(CAPA-17-142953) Post Spike Duplicate (PSD)
1203877500	Method Blank (MB)
1203877501	Laboratory Control Sample (LCS)
1203877502	Laboratory Control Sample (LCS)
1203877503	432587002(CAWA-17-142901) Post Spike (PS)
1203877504	432587002(CAWA-17-142901) Post Spike (PS)
1203877505	432587002(CAWA-17-142901) Post Spike Duplicate (PSD)
1203877506	432587002(CAWA-17-142901) Post Spike Duplicate (PSD)
1203878616	Method Blank (MB)
1203878617	Laboratory Control Sample (LCS)
1203878618	Laboratory Control Sample (LCS)

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

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

SOP Reference

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

Target analytes were detected in the blanks 1203874198 (MB), 1203874199 (MB) and 1203877500 (MB) below the reporting limit.

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

Samples 432512002 (CAPA-17-142953) and 432587002 (CAWA-17-142901) were 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 RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Manual Integrations

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

TIC Comment

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

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

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

Electronic Package Comment

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

System Configuration

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

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA6.I	Agilent 6890N/5975 GC/MS w/ OI 4560/Archon Autosampler	HP6890N/HP5975	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

VOAA.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890A/HP5975C	DB-624	J&W, 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: 2017-2708 GEL Work Order: 432512

The Qualifiers in this report are defined as follows:

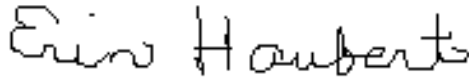
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that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

Review/Validation

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

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

Signature:



Name: Erin Haubert

Date: 05 OCT 2017

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 432512002

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142953

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 19:45

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 19:45

Data File: 091317V6\6Y317.D

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 432512002

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142953

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 19:45

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 19:45

Data File: 091317V6\6Y317.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512002

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142953

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 19:45

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 19:45

Column: DB-624

Data File: 091317V6\6Y317.D

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.4	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	49.2	50.0	ug/L 98	(70%-131%)
Toluene-d8	48.7	50.0	ug/L 97	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.592	7.45	ug/L	0	J
	unknown siloxane	13.75	6.84	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512003

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142958

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 17:51

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 17:51

Data File: 091417V6\6Y419.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512003

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 17:51

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 17:51

Data File: 091417V6\6Y419.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512003

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client ID: CAPA-17-142958

Batch ID: 1700295

Run Date: 09/14/2017 17:51

Prep Date: 09/14/2017 17:51

Data File: 091417V6\6Y419.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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
1634-04-4	tert-Butyl methyl ether	U	0.300	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	0.300	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	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	52.6	50.0	ug/L 105	(70%-131%)
Toluene-d8	51.4	50.0	ug/L 103	(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: 2017-2708

Lab Sample ID: 432512004

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-143005

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 18:18

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 18:18

Data File: 091417V6\6Y420.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512004

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-143005

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 18:18

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 18:18

Data File: 091417V6\6Y420.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512004

Date Collected: 09/06/2017 10:56

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-143005

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 18:18

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 18:18

Data File: 091417V6\6Y420.D

Column: DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.9	50.0	ug/L 110	(71%-134%)
Bromofluorobenzene	49.8	50.0	ug/L 100	(70%-131%)
Toluene-d8	48.1	50.0	ug/L 96	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.592	6.38	ug/L	0	J
	unknown siloxane	13.75	6.91	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 432512005

Date Collected: 09/06/2017 10:43

Date Received: 09/08/2017 09:20

Matrix: W

Client ID: CAWA-17-143037

Batch ID: 1700295

Run Date: 09/14/2017 18:46

Prep Date: 09/14/2017 18:46

Data File: 091417V6\6Y421.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 432512005

Date Collected: 09/06/2017 10:43

Date Received: 09/08/2017 09:20

Matrix: W

Client ID: CAWA-17-143037

Batch ID: 1700295

Run Date: 09/14/2017 18:46

Prep Date: 09/14/2017 18:46

Data File: 091417V6\6Y421.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 432512005

Date Collected: 09/06/2017 10:43

Date Received: 09/08/2017 09:20

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 18:46

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 18:46

Data File: 091417V6\6Y421.D

Column: DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	57.7	50.0	ug/L 115	(71%-134%)
Bromofluorobenzene	50.7	50.0	ug/L 101	(70%-131%)
Toluene-d8	49.6	50.0	ug/L 99	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.592	5.19	ug/L	0	J
	unknown siloxane	13.75	8.32	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 16:43	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 16:43		
Data File: 091817V6\6Z117.D	Column: DB-624	

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 16:43	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 16:43		
Data File: 091817V6\6Z117.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 16:43	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 16:43		
Data File: 091817V6\6Z117.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	57.6	50.0	ug/L	115 (71%-134%)
Bromofluorobenzene	49.8	50.0	ug/L	100 (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
	unknown	3.592	7.42	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 17:12	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 17:12		
Data File: 091817V6\6Z118.D	Column: DB-624	

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 17:12	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 17:12		
Data File: 091817V6\6Z118.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOA6.I	Dilution: 1
Run Date: 09/18/2017 17:12	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/18/2017 17:12		
Data File: 091817V6\6Z118.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	55.9	50.0	ug/L	112 (71%-134%)
Bromofluorobenzene	50.0	50.0	ug/L	100 (70%-131%)
Toluene-d8	48.1	50.0	ug/L	96 (74%-124%)

Tentatively Identified Compound Summary

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

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 2

SDG Number: 2017-2708**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203874200	LCS for batch 1700295	107	97	99
1203874201	LCS for batch 1700295	104	96	99
1203874198	MB for batch 1700295	102	95	98
432512002	CAPA-17-142953	109	97	98
1203874204	CAPA-17-142953PS	112	100	100
1203874206	CAPA-17-142953PSD	108	97	97
1203874205	CAPA-17-142953PS	109	98	102
1203874207	CAPA-17-142953PSD	107	95	99
1203874202	LCS for batch 1700295	104	98	99
1203874203	LCS for batch 1700295	108	95	98
1203874199	MB for batch 1700295	109	97	99
432512003	CAPA-17-142958	114	103	105
432512004	CAPA-17-143005	110	96	100
432512005	CAWA-17-143037	115	99	101
1203877501	LCS for batch 1701572	106	98	96
1203877502	LCS for batch 1701572	109	95	98
1203877500	MB for batch 1701572	109	96	99
432512008	CAWA-17-143059	115	97	100
432512011	CAWA-17-143061	112	96	100
1203878617	LCS for batch 1701572	108	99	96
1203878618	LCS for batch 1701572	105	103	98
1203878616	MB for batch 1701572	110	104	101
1203877503	CAWA-17-142901PS	107	100	97
1203877505	CAWA-17-142901PSD	110	103	98

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
Surrogate Recovery Report

Page 2 of 2

SDG Number: 2017-2708**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203877504	CAWA-17-142901PS	108	105	100
1203877506	CAWA-17-142901PSD	106	101	97

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: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874200

Instrument: VOA6.I

Analysis Date: 09/13/2017 13:12

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	85.1	85	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1120	90	61-125
67-64-1	LCS Acetone	250	0.0	315	126	48-157
74-88-4	LCS Iodomethane	250	0.0	196	78	72-128
75-15-0	LCS Carbon disulfide	250	0.0	183	73	69-138
108-05-4	LCS Vinyl acetate	250	0.0	274	109	67-125
78-93-3	LCS 2-Butanone	250	0.0	274	110	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	225	90	66-124
591-78-6	LCS 2-Hexanone	250	0.0	296	118	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	58.1	116	40-160
74-87-3	LCS Chloromethane	50.0	0.0	64.9	130	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	60.0	120	65-137
74-83-9	LCS Bromomethane	50.0	0.0	52.6	105	63-137
75-00-3	LCS Chloroethane	50.0	0.0	55.1	110	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	57.1	114	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	57.7	115	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	40.6	81	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	42.7	85	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	43.5	87	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	44.1	88	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	43.5	87	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	44.1	88	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874200

Instrument: VOA6.I

Analysis Date: 09/13/2017 13:12

Dilution: 1

Analyst: JPI

Purge Vol: 5 mL

Batch ID: 1700295

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	45.2	90	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	42.7	85	76-125
67-66-3	LCS Chloroform	50.0	0.0	44.2	88	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	43.0	86	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	42.4	85	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	44.5	89	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	45.3	91	74-122
71-43-2	LCS Benzene	50.0	0.0	42.3	85	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	43.9	88	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	43.3	87	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	43.8	88	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	44.3	89	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	44.4	89	78-131
108-88-3	LCS Toluene	50.0	0.0	41.4	83	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	44.0	88	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	42.5	85	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	42.0	84	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	43.4	87	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	45.3	91	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	43.9	88	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	42.0	84	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	42.4	85	73-125

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874200

Instrument: VOA6.I

Analysis Date: 09/13/2017 13:12

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	41.8	84	74-126
100-42-5	LCS Styrene	50.0	0.0	42.3	85	72-130
75-25-2	LCS Bromoform	50.0	0.0	48.5	97	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	41.4	83	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	43.4	87	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	45.6	91	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	41.9	84	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	41.2	82	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	42.4	85	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	41.7	83	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	41.7	83	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	42.2	84	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	42.1	84	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	42.1	84	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	41.1	82	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	42.3	85	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	42.3	85	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	42.0	84	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	46.5	93	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	43.5	87	72-136
91-20-3	LCS Naphthalene	50.0	0.0	43.9	88	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	43.2	86	70-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874200

Instrument: VOA6.I

Analysis Date: 09/13/2017 13:12

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	43.2	86	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	43.8	88	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	42.4	85	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5130	103	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874201

Instrument: VOA6.I

Analysis Date: 09/13/2017 14:08

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	190	76	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	245	98	61-148
107-05-1	LCS Allyl chloride	250	0.0	225	90	59-125
107-13-1	LCS Acrylonitrile	250	0.0	213	85	65-122
107-12-0	LCS Propionitrile	250	0.0	205	82	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	217	87	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	214	86	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	203	81	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2150	86	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	42.1	84	66-147

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874202

Instrument: VOA6.I

Analysis Date: 09/14/2017 10:24

Dilution: 1

Analyst: JPI

Purge Vol: 5 mL

Batch ID: 1700295

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	93.7	94	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1110	89	61-125
67-64-1	LCS Acetone	250	0.0	324	130	48-157
74-88-4	LCS Iodomethane	250	0.0	238	95	72-128
75-15-0	LCS Carbon disulfide	250	0.0	232	93	69-138
108-05-4	LCS Vinyl acetate	250	0.0	254	102	67-125
78-93-3	LCS 2-Butanone	250	0.0	280	112	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	224	90	66-124
591-78-6	LCS 2-Hexanone	250	0.0	298	119	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	58.0	116	40-160
74-87-3	LCS Chloromethane	50.0	0.0	64.7	129	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	60.6	121	65-137
74-83-9	LCS Bromomethane	50.0	0.0	51.9	104	63-137
75-00-3	LCS Chloroethane	50.0	0.0	53.9	108	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	56.9	114	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	54.4	109	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	49.6	99	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	48.3	97	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	47.9	96	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	51.1	102	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	49.5	99	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	50.3	101	75-123

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874202

Instrument: VOA6.I

Analysis Date: 09/14/2017 10:24

Dilution: 1

Analyst: JPI

Purge Vol: 5 mL

Batch ID: 1700295

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	51.6	103	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	47.5	95	76-125
67-66-3	LCS Chloroform	50.0	0.0	49.6	99	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	48.9	98	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	48.6	97	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	50.8	102	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	50.0	100	74-122
71-43-2	LCS Benzene	50.0	0.0	48.1	96	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	49.2	98	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	48.7	97	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	47.1	94	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	49.2	98	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	48.7	97	78-131
108-88-3	LCS Toluene	50.0	0.0	46.7	93	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.0	96	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	45.0	90	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	45.0	90	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	48.8	98	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	48.8	98	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	46.6	93	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	46.7	93	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	46.8	94	73-125

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874202

Instrument: VOA6.I

Analysis Date: 09/14/2017 10:24

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	46.1	92	74-126
100-42-5	LCS Styrene	50.0	0.0	46.1	92	72-130
75-25-2	LCS Bromoform	50.0	0.0	48.9	98	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	45.4	91	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	42.7	85	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	44.6	89	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.8	92	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	45.2	90	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	46.5	93	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	45.4	91	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	45.6	91	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	46.4	93	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	45.9	92	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	45.7	91	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	44.9	90	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	46.2	92	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	45.8	92	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	45.5	91	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	42.4	85	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	47.0	94	72-136
91-20-3	LCS Naphthalene	50.0	0.0	43.0	86	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	44.4	89	70-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874202

Instrument: VOA6.I

Analysis Date: 09/14/2017 10:24

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	45.2	90	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	47.8	96	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.2	90	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4640	93	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1700295

Matrix: WATER

Lab Sample ID 1203874203

Instrument: VOA6.I

Analysis Date: 09/14/2017 11:48

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	207	83	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	236	94	61-148
107-05-1	LCS Allyl chloride	250	0.0	225	90	59-125
107-13-1	LCS Acrylonitrile	250	0.0	241	97	65-122
107-12-0	LCS Propionitrile	250	0.0	235	94	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	244	98	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	236	95	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	220	88	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2560	103	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	42.2	84	66-147

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAPA-17-142953PS

Matrix: W

Lab Sample ID 1203874204

Instrument: VOA6.I

Analysis Date: 09/13/2017 21:37

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	80.5	80	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1120	89	56-131
67-64-1	PS Acetone	250	0.00 U	138	55	25-155
74-88-4	PS Iodomethane	250	0.00 U	186	74	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	170	68	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	264	105	48-133
78-93-3	PS 2-Butanone	250	0.00 U	149	60	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	205	82	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	193	77	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	64.0	128	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	60.7	121	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	57.0	114	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	60.1	120	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	55.3	111	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	57.6	115	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	58.0	116	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	38.6	77	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	41.1	82	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	42.5	85	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	42.2	84	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	42.5	85	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	43.2	86	69-127

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAPA-17-142953PS

Matrix: W

Lab Sample ID 1203874204

Instrument: VOA6.I

Analysis Date: 09/13/2017 21:37

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	41.8	84	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	41.7	83	71-130
67-66-3	PS Chloroform	50.0	0.00 U	43.7	87	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	41.0	82	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	40.2	80	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	41.9	84	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	46.1	92	69-130
71-43-2	PS Benzene	50.0	0.00 U	40.9	82	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	41.6	83	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	43.1	86	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	42.6	85	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	43.4	87	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	42.2	84	70-134
108-88-3	PS Toluene	50.0	0.00 U	39.8	80	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	42.4	85	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	42.1	84	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	42.4	85	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	41.5	83	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	44.0	88	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	43.0	86	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	40.8	82	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	40.7	81	61-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAPA-17-142953PS

Matrix: W

Lab Sample ID 1203874204

Instrument: VOA6.I

Analysis Date: 09/13/2017 21:37

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	40.3	81	62-131
100-42-5	PS Styrene	50.0	0.00 U	40.7	81	59-135
75-25-2	PS Bromoform	50.0	0.00 U	45.1	90	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	39.0	78	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	41.2	82	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	43.1	86	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	40.7	81	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	38.6	77	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	39.7	79	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	39.2	78	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	38.9	78	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	39.4	79	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	39.1	78	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	39.2	78	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	38.6	77	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	39.2	78	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	39.0	78	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	37.1	74	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	41.1	82	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	37.9	76	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	40.1	80	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	38.5	77	52-135

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAPA-17-142953PS

Matrix: W

Lab Sample ID 1203874204

Instrument: VOA6.I

Analysis Date: 09/13/2017 21:37

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	37.1	74	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	43.0	86	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	39.8	80	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	4830	97	60-140

Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-142953PSD

Matrix: W

Lab Sample ID 1203874206

Instrument: VOA6.I

Analysis Date: 09/13/2017 22:05

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	80.1	80	59-132	1	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	1130	91	56-131	1	0-20
67-64-1	PSD Acetone	250	0.00 U	137	55	25-155	0	0-20
74-88-4	PSD Iodomethane	250	0.00 U	189	75	66-133	1	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	170	68	61-141	0	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	253	101	48-133	4	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	149	60	25-143	0	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	208	83	61-127	2	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	195	78	33-138	1	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	60.9	122	33-164	5	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	58.8	118	53-139	3	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	55.2	110	58-140	3	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	57.8	116	59-146	4	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	53.2	106	65-129	4	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	54.7	109	65-141	5	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	55.9	112	69-127	4	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	38.5	77	59-130	0	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	41.6	83	62-123	1	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	43.5	87	69-132	2	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	42.0	84	65-127	1	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	42.5	85	67-127	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	43.1	86	69-127	0	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-142953PSD

Matrix: W

Lab Sample ID 1203874206

Instrument: VOA6.I

Analysis Date: 09/13/2017 22:05

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	42.0	84	66-137	1	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	42.4	85	71-130	2	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	43.7	87	71-129	0	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	41.2	82	69-139	1	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	39.6	79	67-130	1	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	42.0	84	66-143	0	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	46.6	93	69-130	1	0-20
71-43-2	PSD Benzene	50.0	0.00 U	40.9	82	66-125	0	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	40.9	82	65-131	2	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	43.3	87	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	43.4	87	72-129	2	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	44.1	88	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	42.5	85	70-134	1	0-20
108-88-3	PSD Toluene	50.0	0.00 U	39.7	79	60-126	0	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	43.0	86	69-135	2	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	42.7	85	66-125	1	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	42.6	85	67-124	0	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	40.6	81	60-130	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	44.7	89	68-143	2	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	43.2	86	71-127	1	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	40.6	81	64-124	0	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	40.0	80	61-130	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-142953PSD

Matrix: W

Lab Sample ID 1203874206

Instrument: VOA6.I

Analysis Date: 09/13/2017 22:05

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	40.4	81	62-131	0	0-20
100-42-5	PSD Styrene	50.0	0.00 U	40.5	81	59-135	0	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	45.8	92	64-138	1	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	38.3	77	55-133	2	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	41.7	83	62-129	1	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	42.6	85	70-124	1	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	40.4	81	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	37.6	75	50-133	3	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	39.2	78	53-135	1	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	38.5	77	56-128	2	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	38.3	77	53-130	2	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	38.9	78	55-135	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	38.8	78	53-132	1	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	38.7	77	50-138	1	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	38.1	76	49-138	1	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	39.2	78	56-126	0	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	39.1	78	55-125	0	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	36.8	74	43-142	1	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	41.9	84	62-141	2	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	39.4	79	40-147	4	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	41.6	83	62-134	4	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	40.0	80	52-135	4	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-142953PSD

Matrix: W

Lab Sample ID 1203874206

Instrument: VOA6.I

Analysis Date: 09/13/2017 22:05

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	38.2	76	50-133	3	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	43.6	87	71-133	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	40.2	80	60-125	1	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4940	99	60-140	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAPA-17-142953PS

Matrix: W

Lab Sample ID 1203874205

Instrument: VOA6.I

Analysis Date: 09/13/2017 23:29

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

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	191	76	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	242	97	57-149
107-05-1	PS Allyl chloride	250	0.00 U	232	93	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	236	95	59-129
107-12-0	PS Propionitrile	250	0.00 U	229	91	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	243	97	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	232	93	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	222	89	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2440	98	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	42.4	85	63-146

Volatile

Page 2 of 2

**Quality Control Summary
Spike Recovery Report**

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-142953PSD

Matrix: W

Lab Sample ID 1203874207

Instrument: VOA6.I

Analysis Date: 09/13/2017 23:57

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1700295

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	Acceptance RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00 U	190	76	49-141	1	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	230	92	57-149	5	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	218	87	54-128	6	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	228	91	59-129	3	0-20
107-12-0	PSD Propionitrile	250	0.00 U	223	89	58-131	2	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	235	94	59-134	3	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	226	90	62-135	3	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	213	85	60-136	4	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2410	96	60-143	1	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	39.7	79	63-146	7	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877501

Instrument: VOA6.I

Analysis Date: 09/18/2017 10:13

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1701572

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	96.9	97	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1160	93	61-125
67-64-1	LCS Acetone	250	0.0	335	134	48-157
74-88-4	LCS Iodomethane	250	0.0	253	101	72-128
75-15-0	LCS Carbon disulfide	250	0.0	243	97	69-138
108-05-4	LCS Vinyl acetate	250	0.0	238	95	67-125
78-93-3	LCS 2-Butanone	250	0.0	286	115	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	228	91	66-124
591-78-6	LCS 2-Hexanone	250	0.0	307	123	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	37.7	75	40-160
74-87-3	LCS Chloromethane	50.0	0.0	48.7	97	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	49.6	99	65-137
74-83-9	LCS Bromomethane	50.0	0.0	48.1	96	63-137
75-00-3	LCS Chloroethane	50.0	0.0	49.1	98	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	53.6	107	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	53.0	106	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	53.1	106	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	51.7	103	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	51.0	102	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	54.7	109	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	53.6	107	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	53.5	107	75-123

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877501

Instrument: VOA6.I

Analysis Date: 09/18/2017 10:13

Dilution: 1

Analyst: JPI

Purge Vol: 5 mL

Batch ID: 1701572

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	55.5	111	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	50.8	102	76-125
67-66-3	LCS Chloroform	50.0	0.0	53.3	107	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	52.9	106	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	51.8	104	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	54.7	109	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	53.8	108	74-122
71-43-2	LCS Benzene	50.0	0.0	50.9	102	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	52.6	105	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	51.4	103	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	50.3	101	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	52.2	104	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	51.9	104	78-131
108-88-3	LCS Toluene	50.0	0.0	48.4	97	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	50.2	100	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	46.6	93	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	46.4	93	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	51.2	102	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	50.9	102	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	48.2	96	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	48.6	97	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	48.6	97	73-125

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877501

Instrument: VOA6.I

Analysis Date: 09/18/2017 10:13

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1701572

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	47.9	96	74-126
100-42-5	LCS Styrene	50.0	0.0	48.0	96	72-130
75-25-2	LCS Bromoform	50.0	0.0	50.1	100	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.3	93	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	43.2	86	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	44.6	89	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	46.5	93	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	46.1	92	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	47.4	95	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.5	93	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	46.3	93	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	47.3	95	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	46.9	94	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	46.9	94	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	46.2	92	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	47.2	94	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	46.7	93	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	46.9	94	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	44.3	89	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	50.4	101	72-136
91-20-3	LCS Naphthalene	50.0	0.0	45.0	90	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	47.6	95	70-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877501

Instrument: VOA6.I

Analysis Date: 09/18/2017 10:13

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1701572

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	48.0	96	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	50.4	101	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	46.4	93	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4740	95	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203877502

Instrument: VOA6.I

Analysis Date: 09/18/2017 11:10

Dilution: 1

Analyst: JP1

Purge Vol: 5 mL

Batch ID: 1701572

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	257	103	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	226	90	61-148
107-05-1	LCS Allyl chloride	250	0.0	213	85	59-125
107-13-1	LCS Acrylonitrile	250	0.0	230	92	65-122
107-12-0	LCS Propionitrile	250	0.0	227	91	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	236	95	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	229	92	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	212	85	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2530	101	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	39.9	80	66-147

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	104	104	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1300	104	56-131
67-64-1	PS Acetone	250	0.00 U	157	63	25-155
74-88-4	PS Iodomethane	250	0.00 U	263	105	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	277	111	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	275	110	48-133
78-93-3	PS 2-Butanone	250	0.00 U	202	81	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	261	104	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	231	92	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	33.2	66	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	44.8	90	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	51.8	104	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	42.9	86	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	50.2	100	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	52.2	104	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	53.5	107	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	55.3	111	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	52.9	106	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	58.5	117	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	57.1	114	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	56.4	113	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	54.6	109	69-127

Volatile
Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	63.2	126	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	53.2	106	71-130
67-66-3	PS Chloroform	50.0	0.00 U	53.9	108	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	54.8	110	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	52.6	105	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	57.4	115	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	55.1	110	69-130
71-43-2	PS Benzene	50.0	0.00 U	52.7	105	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	54.3	109	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	54.8	110	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	53.9	108	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	57.8	116	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	58.3	117	70-134
108-88-3	PS Toluene	50.0	0.00 U	51.4	103	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	59.8	120	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	52.6	105	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	51.9	104	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	50.9	102	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	49.7	99	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	54.3	109	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	51.1	102	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	51.6	103	61-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	51.4	103	62-131
100-42-5	PS Styrene	50.0	0.00 U	52.5	105	59-135
75-25-2	PS Bromoform	50.0	0.00 U	61.2	122	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	51.4	103	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	53.0	106	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	52.0	104	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	51.5	103	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	52.0	104	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	52.7	105	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	51.8	104	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	51.5	103	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	51.3	103	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	52.7	105	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	52.7	105	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	53.3	107	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	51.4	103	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	51.6	103	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	53.8	108	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	57.9	116	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	51.7	103	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	50.8	102	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	51.5	103	52-135

Volatile

Page 4 of 8

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877503

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	52.4	105	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	57.6	115	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	50.8	102	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	5220	104	60-140

Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	105	105	59-132	1	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	1350	108	56-131	4	0-20
67-64-1	PSD Acetone	250	0.00 U	163	65	25-155	4	0-20
74-88-4	PSD Iodomethane	250	0.00 U	268	107	66-133	2	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	285	114	61-141	3	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	273	109	48-133	1	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	210	84	25-143	4	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	270	108	61-127	4	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	238	95	33-138	3	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	32.9	66	33-164	1	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	47.0	94	53-139	5	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	51.2	102	58-140	1	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	42.1	84	59-146	2	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	50.1	100	65-129	0	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	52.2	104	65-141	0	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	52.7	105	69-127	2	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	56.4	113	59-130	2	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	53.6	107	62-123	1	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	59.0	118	69-132	1	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	58.1	116	65-127	2	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	57.0	114	67-127	1	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	54.8	110	69-127	0	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	64.5	129	66-137	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	53.3	107	71-130	0	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	54.3	109	71-129	1	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	56.3	113	69-139	3	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	53.6	107	67-130	2	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	59.2	118	66-143	3	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	55.0	110	69-130	0	0-20
71-43-2	PSD Benzene	50.0	0.00 U	53.3	107	66-125	1	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	55.4	111	65-131	2	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	54.9	110	67-127	0	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	54.4	109	72-129	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	58.0	116	70-138	0	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	58.1	116	70-134	0	0-20
108-88-3	PSD Toluene	50.0	0.00 U	52.2	104	60-126	2	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	59.7	119	69-135	0	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	52.7	105	66-125	0	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	51.9	104	67-124	0	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	52.1	104	60-130	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	49.8	100	68-143	0	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	54.9	110	71-127	1	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	51.7	103	64-124	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	52.4	105	61-130	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	52.1	104	62-131	1	0-20
100-42-5	PSD Styrene	50.0	0.00 U	52.6	105	59-135	0	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	61.5	123	64-138	0	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	51.9	104	55-133	1	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	53.8	108	62-129	2	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	52.8	106	70-124	1	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	51.0	102	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	52.3	105	50-133	1	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	53.1	106	53-135	1	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	51.8	104	56-128	0	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	51.5	103	53-130	0	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	51.8	104	55-135	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	52.9	106	53-132	0	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	53.3	107	50-138	1	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	53.6	107	49-138	1	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	51.6	103	56-126	0	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	51.8	104	55-125	0	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	54.3	109	43-142	1	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	60.2	120	62-141	4	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	52.5	105	40-147	2	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	52.5	105	62-134	3	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	51.9	104	52-135	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877505

Instrument: VOAA.I

Analysis Date: 09/19/2017 16:43

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	52.9	106	50-133	1	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	58.4	117	71-133	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	50.8	102	60-125	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	5500	110	60-140	5	0-20

Volatile

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Post Spike

Client ID: CAWA-17-142901PS

Matrix: W

Lab Sample ID 1203877504

Instrument: VOAA.I

Analysis Date: 09/19/2017 17:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	296	119	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	264	106	57-149
107-05-1	PS Allyl chloride	250	0.00 U	251	100	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	238	95	59-129
107-12-0	PS Propionitrile	250	0.00 U	229	92	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	238	95	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	241	97	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	244	97	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2610	105	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	45.9	92	63-146

Volatile

Page 2 of 2

Quality Control Summary Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-142901PSD

Matrix: W

Lab Sample ID 1203877506

Instrument: VOAA.I

Analysis Date: 09/19/2017 17:31

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	307	123	49-141	3	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	266	106	57-149	0	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	259	104	54-128	3	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	258	103	59-129	8	0-20
107-12-0	PSD Propionitrile	250	0.00 U	248	99	58-131	8	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	255	102	59-134	7	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	260	104	62-135	7	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	256	102	60-136	5	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2860	114	60-143	9	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	47.0	94	63-146	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	106	106	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1370	110	61-125
67-64-1	LCS Acetone	250	0.0	355	142	48-157
74-88-4	LCS Iodomethane	250	0.0	273	109	72-128
75-15-0	LCS Carbon disulfide	250	0.0	291	116	69-138
108-05-4	LCS Vinyl acetate	250	0.0	276	111	67-125
78-93-3	LCS 2-Butanone	250	0.0	312	125	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	276	110	66-124
591-78-6	LCS 2-Hexanone	250	0.0	333	133	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	31.9	64	40-160
74-87-3	LCS Chloromethane	50.0	0.0	48.0	96	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	51.4	103	65-137
74-83-9	LCS Bromomethane	50.0	0.0	40.7	81	63-137
75-00-3	LCS Chloroethane	50.0	0.0	51.0	102	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	52.0	104	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	53.1	106	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	58.3	117	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	54.9	110	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	60.6	121	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	58.9	118	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	57.9	116	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	55.4	111	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	65.8	132	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	53.7	107	76-125
67-66-3	LCS Chloroform	50.0	0.0	55.1	110	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	57.7	115	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	54.5	109	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	60.3	121	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	55.4	111	74-122
71-43-2	LCS Benzene	50.0	0.0	54.0	108	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	56.0	112	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	55.6	111	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	54.7	109	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	58.7	117	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	58.8	118	78-131
108-88-3	LCS Toluene	50.0	0.0	52.1	104	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	60.3	121	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	53.1	106	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	52.0	104	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	52.0	104	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	50.3	101	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	54.9	110	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	51.7	103	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	52.7	105	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	52.4	105	74-126
100-42-5	LCS Styrene	50.0	0.0	54.3	109	72-130
75-25-2	LCS Bromoform	50.0	0.0	61.1	122	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	51.6	103	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	53.1	106	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	52.3	105	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	50.8	102	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	52.2	104	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	53.0	106	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	51.7	103	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	51.4	103	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	51.3	103	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	52.9	106	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	53.0	106	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	53.5	107	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	51.1	102	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	51.3	103	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	54.0	108	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	59.5	119	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	50.9	102	72-136
91-20-3	LCS Naphthalene	50.0	0.0	51.1	102	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	50.8	102	70-130

Volatile

Page 4 of 4

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878617

Instrument: VOAA.I

Analysis Date: 09/19/2017 14:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	51.9	104	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	58.8	118	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	50.3	101	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5560	111	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701572

Matrix: WATER

Lab Sample ID 1203878618

Instrument: VOAA.I

Analysis Date: 09/19/2017 15:32

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1701572

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	307	123	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	289	116	61-148
107-05-1	LCS Allyl chloride	250	0.0	270	108	59-125
107-13-1	LCS Acrylonitrile	250	0.0	255	102	65-122
107-12-0	LCS Propionitrile	250	0.0	244	98	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	255	102	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	259	103	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	261	105	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2790	112	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	49.6	99	66-147

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1700295	Instrument ID:	VOA6.I	Data File:	091317V6\6Y306BA.D
Lab Sample ID:	1203874198	Prep Date:	09/13/2017 14:35	Analyzed:	09/13/17 14:35
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 1700295	1203874200	091317V6\6Y303LA.D	09/13/17	1312
02 LCS for batch 1700295	1203874201	091317V6\6Y305LA.D	09/13/17	1408
03 CAPA-17-142953	432512002	091317V6\6Y317.D	09/13/17	1945
04 CAPA-17-142953PS	1203874204	091317V6\6Y321.D	09/13/17	2137
05 CAPA-17-142953PSD	1203874206	091317V6\6Y322.D	09/13/17	2205
06 CAPA-17-142953PS	1203874205	091317V6\6Y325.D	09/13/17	2329
07 CAPA-17-142953PSD	1203874207	091317V6\6Y326.D	09/13/17	2357

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1700295	Instrument ID:	VOA6.I	Data File:	091417V6\6Y408BA95.D
Lab Sample ID:	1203874199	Prep Date:	09/14/2017 12:44	Analyzed:	09/14/17 12:44
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
09 LCS for batch 1700295	1203874202	091417V6\6Y403LA95.D	09/14/17	1024
10 LCS for batch 1700295	1203874203	091417V6\6Y406LA95.D	09/14/17	1148
11 CAPA-17-142958	432512003	091417V6\6Y419.D	09/14/17	1751
12 CAPA-17-143005	432512004	091417V6\6Y420.D	09/14/17	1818
13 CAWA-17-143037	432512005	091417V6\6Y421.D	09/14/17	1846

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1701572	Instrument ID:	VOA6.I	Data File:	091817V6\6Z106BA.D
Lab Sample ID:	1203877500	Prep Date:	09/18/2017 11:38	Analyzed:	09/18/17 11:38
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 1701572	1203877501	091817V6\6Z103LA.D	09/18/17	1013
02 LCS for batch 1701572	1203877502	091817V6\6Z105LA.D	09/18/17	1110
03 CAWA-17-143059	432512008	091817V6\6Z117.D	09/18/17	1643
04 CAWA-17-143061	432512011	091817V6\6Z118.D	09/18/17	1712

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1701572	Instrument ID:	VOAA.I	Data File:	091917\AA206.D
Lab Sample ID:	1203878616	Prep Date:	09/19/2017 15:56	Analyzed:	09/19/17 15:56
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
06 LCS for batch 1701572	1203878617	091917\AA203L.D	09/19/17	1444
07 LCS for batch 1701572	1203878618	091917\AA205.D	09/19/17	1532
08 CAWA-17-142901PS	1203877503	091917\AA207.D	09/19/17	1620
09 CAWA-17-142901PSD	1203877505	091917\AA208.D	09/19/17	1643
10 CAWA-17-142901PS	1203877504	091917\AA209.D	09/19/17	1707
11 CAWA-17-142901PSD	1203877506	091917\AA210.D	09/19/17	1731

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203874198

Client Sample: QC for batch 1700295

Client ID: MB for batch 1700295

Batch ID: 1700295

Run Date: 09/13/2017 14:35

Prep Date: 09/13/2017 14:35

Data File: 091317V6\6Y306BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	J	0.420	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	J	0.370	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203874198

Client Sample: QC for batch 1700295

Client: ARSL004

Project: QC

Client ID: MB for batch 1700295

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 14:35

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 14:35

Data File: 091317V6\6Y306BA.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	J	0.490	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

Page 3 of 3

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874198		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	MB for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/13/2017 14:35	Analyst:	JP1
Prep Date:	09/13/2017 14:35	Purge Vol:	5 mL
Data File:	091317V6\6Y306BA.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.1	50.0	ug/L	102 (71%-134%)
Bromofluorobenzene	48.9	50.0	ug/L	98 (70%-131%)
Toluene-d8	47.6	50.0	ug/L	95 (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: 2017-2708

Matrix: WATER

Lab Sample ID: 1203874199

Client Sample: QC for batch 1700295

Client: ARSL004

Project: QC

Client ID: MB for batch 1700295

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 12:44

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 12:44

Data File: 091417V6\6Y408BA95.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	J	0.330	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203874199

Client Sample: QC for batch 1700295

Client: ARSL004

Project: QC

Client ID: MB for batch 1700295

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/14/2017 12:44

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/14/2017 12:44

Data File: 091417V6\6Y408BA95.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	J	0.400	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874199		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	MB for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/14/2017 12:44	Analyst:	JP1
Prep Date:	09/14/2017 12:44	Purge Vol:	5 mL
Data File:	091417V6\6Y408BA95.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.7	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	49.3	50.0	ug/L 99	(70%-131%)
Toluene-d8	48.6	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: 2017-2708	Matrix: WATER
Lab Sample ID: 1203874200	
Client Sample: QC for batch 1700295	Client: ARSL004
Client ID: LCS for batch 1700295	Method: SW-846:8260B
Batch ID: 1700295	Inst: VOA6.I
Run Date: 09/13/2017 13:12	Analyst: JP1
Prep Date: 09/13/2017 13:12	Purge Vol: 5 mL
Data File: 091317V6\6Y303LA.D	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		43.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		40.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		42.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	43.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		45.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	B	43.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		42.1	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		46.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		43.9	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		42.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		45.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		42.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		42.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		45.2	ug/L	0.300	1.00
78-93-3	2-Butanone		274	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		41.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		296	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		41.7	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		41.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		225	ug/L	1.50	5.00
67-64-1	Acetone		315	ug/L	1.50	10.0
75-05-8	Acetonitrile		1120	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		42.3	ug/L	0.300	1.00
108-86-1	Bromobenzene		41.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		42.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		44.3	ug/L	0.300	1.00
75-25-2	Bromoform		48.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 1203874200

Client Sample: QC for batch 1700295

Client ID: LCS for batch 1700295

Batch ID: 1700295

Run Date: 09/13/2017 13:12

Prep Date: 09/13/2017 13:12

Data File: 091317V6\6Y303LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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		52.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		183	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		44.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.0	ug/L	0.300	1.00
75-00-3	Chloroethane		55.1	ug/L	0.300	1.00
67-66-3	Chloroform		44.2	ug/L	0.300	1.00
74-87-3	Chloromethane		64.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		43.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		58.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		57.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	43.5	ug/L	0.300	1.00
74-88-4	Iodomethane		196	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		41.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		42.7	ug/L	1.00	10.0
91-20-3	Naphthalene		43.9	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		42.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		43.4	ug/L	0.300	1.00
108-88-3	Toluene		41.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		43.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		57.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		274	ug/L	1.50	5.00
75-01-4	Vinyl chloride		60.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		44.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		44.4	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		85.1	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5130	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		42.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		41.2	ug/L	0.300	1.00
95-47-6	o-Xylene		41.8	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		42.1	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874200		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	LCS for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/13/2017 13:12	Analyst:	JP1
Prep Date:	09/13/2017 13:12		
Data File:	091317V6\6Y303LA.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		42.2	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		44.0	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		53.6	50.0	ug/L	107	(71%-134%)
Bromofluorobenzene		49.7	50.0	ug/L	99	(70%-131%)
Toluene-d8		48.3	50.0	ug/L	97	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 1203874201

Client Sample: QC for batch 1700295

Client ID: LCS for batch 1700295

Batch ID: 1700295

Run Date: 09/13/2017 14:08

Prep Date: 09/13/2017 14:08

Data File: 091317V6\6Y305LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	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	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		190	ug/L	1.50	5.00
107-13-1	Acrylonitrile		213	ug/L	1.50	5.00
107-05-1	Allyl chloride		225	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203874201

Client Sample: QC for batch 1700295

Client: ARSL004

Project: QC

Client ID: LCS for batch 1700295

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 14:08

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 14:08

Data File: 091317V6\6Y305LA.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		203	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2150	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		217	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		214	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		205	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		245	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874201		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	LCS for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/13/2017 14:08	Analyst:	JP1
Prep Date:	09/13/2017 14:08	Purge Vol:	5 mL
Data File:	091317V6\6Y305LA.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.9	50.0	104	(71%-134%)
Bromofluorobenzene	49.7	50.0	99	(70%-131%)
Toluene-d8	48.1	50.0	96	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708		Matrix:	WATER
Lab Sample ID: 1203874202			
Client Sample: QC for batch 1700295	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1700295	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution:	1
Run Date: 09/14/2017 10:24	Analyst: JP1	Purge Vol:	5 mL
Prep Date: 09/14/2017 10:24			
Data File: 091417V6\6Y403LA95.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		47.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		48.9	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		45.0	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		49.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		49.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	44.4	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		44.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		45.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		42.4	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		46.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		50.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		48.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		45.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.6	ug/L	0.300	1.00
78-93-3	2-Butanone		280	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		45.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		298	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		45.6	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		44.9	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		224	ug/L	1.50	5.00
67-64-1	Acetone		324	ug/L	1.50	10.0
75-05-8	Acetonitrile		1110	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		48.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		49.2	ug/L	0.300	1.00
75-25-2	Bromoform		48.9	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708		Matrix:	WATER
Lab Sample ID: 1203874202			
Client Sample: QC for batch 1700295	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1700295	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution:	1
Run Date: 09/14/2017 10:24	Analyst: JP1	Purge Vol:	5 mL
Prep Date: 09/14/2017 10:24			
Data File: 091417V6\6Y403LA95.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		51.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		232	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		50.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.7	ug/L	0.300	1.00
75-00-3	Chloroethane		53.9	ug/L	0.300	1.00
67-66-3	Chloroform		49.6	ug/L	0.300	1.00
74-87-3	Chloromethane		64.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		48.8	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		58.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		54.4	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		46.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	47.0	ug/L	0.300	1.00
74-88-4	Iodomethane		238	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.3	ug/L	1.00	10.0
91-20-3	Naphthalene		43.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		46.1	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.8	ug/L	0.300	1.00
108-88-3	Toluene		46.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		56.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		254	ug/L	1.50	5.00
75-01-4	Vinyl chloride		60.6	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		50.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		48.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		93.7	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		45.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		45.2	ug/L	0.300	1.00
95-47-6	o-Xylene		46.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		45.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874202		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	LCS for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/14/2017 10:24	Analyst:	JP1
Prep Date:	09/14/2017 10:24	Purge Vol:	5 mL
Data File:	091417V6\6Y403LA95.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		47.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		46.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		51.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.2	50.0	104	(71%-134%)
Bromofluorobenzene	49.4	50.0	99	(70%-131%)
Toluene-d8	49.1	50.0	98	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Matrix: WATER	
Lab Sample ID: 1203874203		
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: LCS for batch 1700295	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/14/2017 11:48	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/14/2017 11:48		
Data File: 091417V6\6Y406LA95.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		42.2	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		207	ug/L	1.50	5.00
107-13-1	Acrylonitrile		241	ug/L	1.50	5.00
107-05-1	Allyl chloride		225	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874203		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	LCS for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/14/2017 11:48	Analyst:	JP1
Prep Date:	09/14/2017 11:48	Purge Vol:	5 mL
Data File:	091417V6\6Y406LA95.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		220	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2560	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		244	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		236	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		235	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		236	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203874203		
Client Sample:	QC for batch 1700295	Client:	ARSL004
Client ID:	LCS for batch 1700295	Method:	SW-846:8260B
Batch ID:	1700295	Inst:	VOA6.I
Run Date:	09/14/2017 11:48	Analyst:	JP1
Prep Date:	09/14/2017 11:48	Purge Vol:	5 mL
Data File:	091417V6\6Y406LA95.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	0.300	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	0.300	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	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	49.0	50.0	ug/L	98 (70%-131%)
Toluene-d8	47.3	50.0	ug/L	95 (74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874204	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 21:37	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 21:37		
Data File: 091317V6\6Y321.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.0	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		41.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		42.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		40.2	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	38.5	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		43.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	B	37.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		39.1	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		41.1	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		43.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		39.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.1	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		39.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.4	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		39.0	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		41.8	ug/L	0.300	1.00
78-93-3	2-Butanone		149	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		39.2	ug/L	0.300	1.00
591-78-6	2-Hexanone		193	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		38.9	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		38.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		205	ug/L	1.50	5.00
67-64-1	Acetone		138	ug/L	1.50	10.0
75-05-8	Acetonitrile		1120	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		40.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.7	ug/L	0.300	1.00
74-97-5	Bromochloromethane		41.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		43.4	ug/L	0.300	1.00
75-25-2	Bromoform		45.1	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874204	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 21:37	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 21:37		
Data File: 091317V6\6Y321.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		60.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		170	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		41.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		40.8	ug/L	0.300	1.00
75-00-3	Chloroethane		55.3	ug/L	0.300	1.00
67-66-3	Chloroform		43.7	ug/L	0.300	1.00
74-87-3	Chloromethane		60.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		44.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.6	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		64.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		58.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		40.7	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	37.9	ug/L	0.300	1.00
74-88-4	Iodomethane		186	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		39.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		41.1	ug/L	1.00	10.0
91-20-3	Naphthalene		40.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		40.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		41.5	ug/L	0.300	1.00
108-88-3	Toluene		39.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		57.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		264	ug/L	1.50	5.00
75-01-4	Vinyl chloride		57.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		43.2	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		80.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4830	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		37.1	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		38.6	ug/L	0.300	1.00
95-47-6	o-Xylene		40.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		39.2	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874204	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 21:37	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 21:37				
Data File:	091317V6\6Y321.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		42.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		39.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		42.2	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		42.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	55.8	50.0	ug/L 112	(71%-134%)
Bromofluorobenzene	50.2	50.0	ug/L 100	(70%-131%)
Toluene-d8	49.8	50.0	ug/L 100	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874205	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 23:29	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 23:29		
Data File: 091317V6\6Y325.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		42.4	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		191	ug/L	1.50	5.00
107-13-1	Acrylonitrile		236	ug/L	1.50	5.00
107-05-1	Allyl chloride		232	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874205	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 23:29	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 23:29				
Data File:	091317V6\6Y325.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		222	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2440	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		243	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		232	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		229	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		242	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874205	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 23:29	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 23:29				
Data File:	091317V6\6Y325.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
1,2-Dichloroethane-d4	54.5	50.0	ug/L	109	(71%-134%)
Bromofluorobenzene	51.2	50.0	ug/L	102	(70%-131%)
Toluene-d8	49.0	50.0	ug/L	98	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874206	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 22:05	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 22:05		
Data File: 091317V6\6Y322.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		41.2	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		42.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		39.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	40.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		42.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	B	38.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		38.8	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		41.9	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		43.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		39.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.6	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		39.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		42.0	ug/L	0.300	1.00
78-93-3	2-Butanone		149	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		38.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		195	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		38.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		38.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		208	ug/L	1.50	5.00
67-64-1	Acetone		137	ug/L	1.50	10.0
75-05-8	Acetonitrile		1130	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		40.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		42.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		44.1	ug/L	0.300	1.00
75-25-2	Bromoform		45.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874206	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 22:05	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 22:05				
Data File:	091317V6\6Y322.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		57.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		170	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		42.0	ug/L	0.300	1.00
108-90-7	Chlorobenzene		40.6	ug/L	0.300	1.00
75-00-3	Chloroethane		53.2	ug/L	0.300	1.00
67-66-3	Chloroform		43.7	ug/L	0.300	1.00
74-87-3	Chloromethane		58.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		44.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		43.4	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		60.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		55.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		40.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	39.4	ug/L	0.300	1.00
74-88-4	Iodomethane		189	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		38.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		41.6	ug/L	1.00	10.0
91-20-3	Naphthalene		41.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		40.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.6	ug/L	0.300	1.00
108-88-3	Toluene		39.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		40.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		54.7	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		253	ug/L	1.50	5.00
75-01-4	Vinyl chloride		55.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		43.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.5	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		80.1	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4940	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		36.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		37.6	ug/L	0.300	1.00
95-47-6	o-Xylene		40.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		38.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874206	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 22:05	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 22:05				
Data File:	091317V6\6Y322.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		38.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		42.0	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		43.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.9	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	48.3	50.0	ug/L 97	(70%-131%)
Toluene-d8	48.3	50.0	ug/L 97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874207	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 23:57	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 23:57		
Data File: 091317V6\6Y326.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		39.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		190	ug/L	1.50	5.00
107-13-1	Acrylonitrile		228	ug/L	1.50	5.00
107-05-1	Allyl chloride		218	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:56	Matrix: W
Lab Sample ID: 1203874207	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1700295	Client: ARSL004	Project: QC
Client ID: CAPA-17-142953PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1700295	Inst: VOA6.I	Dilution: 1
Run Date: 09/13/2017 23:57	Analyst: JP1	Purge Vol: 5 mL
Prep Date: 09/13/2017 23:57		
Data File: 091317V6\6Y326.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		213	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2410	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		235	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		226	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		223	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		230	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 10:56	Matrix:	W
Lab Sample ID:	1203874207	Date Received:	09/08/2017 09:20		
Client Sample:	QC for batch 1700295	Client:	ARSL004	Project:	QC
Client ID:	CAPA-17-142953PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1700295	Inst:	VOA6.I	Dilution:	1
Run Date:	09/13/2017 23:57	Analyst:	JP1	Purge Vol:	5 mL
Prep Date:	09/13/2017 23:57				
Data File:	091317V6\6Y326.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.5	50.0	107	(71%-134%)
Bromofluorobenzene	49.4	50.0	99	(70%-131%)
Toluene-d8	47.5	50.0	95	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203877500

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 11:38

Prep Date: 09/18/2017 11:38

Data File: 091817V6\6Z106BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	J	0.440	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	J	0.380	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203877500

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: MB for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA6.I

Dilution: 1

Run Date: 09/18/2017 11:38

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/18/2017 11:38

Data File: 091817V6\6Z106BA.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	J	0.490	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	J	0.520	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

Page 3 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203877500

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 11:38

Prep Date: 09/18/2017 11:38

Data File: 091817V6\6Z106BA.D

Matrix: WATER

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: QC

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	0.300	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	0.300	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.7	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	49.5	50.0	ug/L 99	(70%-131%)
Toluene-d8	48.0	50.0	ug/L 96	(74%-124%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203877501

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 10:13

Prep Date: 09/18/2017 10:13

Data File: 091817V6\6Z103LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		52.9	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.6	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		53.6	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		53.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		51.8	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	B	47.6	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		44.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	B	48.0	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		44.3	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		48.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		46.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		53.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		47.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		46.4	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		46.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		55.5	ug/L	0.300	1.00
78-93-3	2-Butanone		286	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		307	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		46.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		46.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		228	ug/L	1.50	5.00
67-64-1	Acetone		335	ug/L	1.50	10.0
75-05-8	Acetonitrile		1160	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		50.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		46.5	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.8	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		52.2	ug/L	0.300	1.00
75-25-2	Bromoform		50.1	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203877501

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 10:13

Prep Date: 09/18/2017 10:13

Data File: 091817V6\6Z103LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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		48.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		243	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		54.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.6	ug/L	0.300	1.00
75-00-3	Chloroethane		49.1	ug/L	0.300	1.00
67-66-3	Chloroform		53.3	ug/L	0.300	1.00
74-87-3	Chloromethane		48.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		50.9	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		37.7	ug/L	0.300	1.00
60-29-7	Ethyl ether	B	53.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	B	50.4	ug/L	0.300	1.00
74-88-4	Iodomethane		253	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		51.7	ug/L	1.00	10.0
91-20-3	Naphthalene		45.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		48.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.2	ug/L	0.300	1.00
108-88-3	Toluene		48.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		53.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		238	ug/L	1.50	5.00
75-01-4	Vinyl chloride		49.6	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.5	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		51.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.9	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4740	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		46.9	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		46.1	ug/L	0.300	1.00
95-47-6	o-Xylene		47.9	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.9	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 1203877501

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 10:13

Prep Date: 09/18/2017 10:13

Data File: 091817V6\6Z103LA.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		51.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		54.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		50.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.1	50.0	ug/L 106	(71%-134%)
Bromofluorobenzene	48.1	50.0	ug/L 96	(70%-131%)
Toluene-d8	48.8	50.0	ug/L 98	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203877502

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOA6.I

Dilution: 1

Run Date: 09/18/2017 11:10

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/18/2017 11:10

Column: DB-624

Data File: 091817V6\6Z105LA.D

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		39.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		257	ug/L	1.50	5.00
107-13-1	Acrylonitrile		230	ug/L	1.50	5.00
107-05-1	Allyl chloride		213	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 1203877502

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/18/2017 11:10

Prep Date: 09/18/2017 11:10

Data File: 091817V6\6Z105LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

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	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		212	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2530	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		236	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		229	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		227	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		226	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203877502		
Client Sample:	QC for batch 1701572	Client:	ARSL004
Client ID:	LCS for batch 1701572	Method:	SW-846:8260B
Batch ID:	1701572	Inst:	VOA6.I
Run Date:	09/18/2017 11:10	Analyst:	JP1
Prep Date:	09/18/2017 11:10		
Data File:	091817V6\6Z105LA.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.5	50.0	ug/L	109	(71%-134%)
Bromofluorobenzene	49.2	50.0	ug/L	98	(70%-131%)
Toluene-d8	47.7	50.0	ug/L	95	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/08/2017 13:32	Matrix:	W
Lab Sample ID:	1203877503	Date Received:	09/13/2017 09:20		
Client Sample:	QC for batch 1701572	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-142901PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1701572	Inst:	VOAA.I	Dilution:	1
Run Date:	09/19/2017 16:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	09/19/2017 16:20				
Data File:	091917\AA207.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		57.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		54.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		53.0	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		52.6	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		56.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		55.3	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		52.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.5	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		52.0	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		52.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		57.9	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		55.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		54.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		51.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		63.2	ug/L	0.300	1.00
78-93-3	2-Butanone		202	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		51.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		231	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		53.3	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		261	ug/L	1.50	5.00
67-64-1	Acetone		157	ug/L	1.50	10.0
75-05-8	Acetonitrile		1300	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		52.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		51.5	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		57.8	ug/L	0.300	1.00
75-25-2	Bromoform		61.2	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/08/2017 13:32	Matrix:	W
Lab Sample ID:	1203877503	Date Received:	09/13/2017 09:20		
Client Sample:	QC for batch 1701572	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-142901PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1701572	Inst:	VOAA.I	Dilution:	1
Run Date:	09/19/2017 16:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	09/19/2017 16:20				
Data File:	091917\AA207.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		277	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		57.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		51.1	ug/L	0.300	1.00
75-00-3	Chloroethane		50.2	ug/L	0.300	1.00
67-66-3	Chloroform		53.9	ug/L	0.300	1.00
74-87-3	Chloromethane		44.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		49.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		33.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		53.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		51.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		51.7	ug/L	0.300	1.00
74-88-4	Iodomethane		263	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		51.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		52.9	ug/L	1.00	10.0
91-20-3	Naphthalene		50.8	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		52.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		50.9	ug/L	0.300	1.00
108-88-3	Toluene		51.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		54.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		52.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		275	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		54.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		58.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		104	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5220	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		53.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		52.0	ug/L	0.300	1.00
95-47-6	o-Xylene		51.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877503	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 16:20	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 16:20		
Data File: 091917\AA207.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		58.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		51.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		57.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		59.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.6	50.0	107	(71%-134%)
Bromofluorobenzene	48.5	50.0	97	(70%-131%)
Toluene-d8	50.2	50.0	100	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877504	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:07	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:07		
Data File: 091917\AA209.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		45.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		296	ug/L	1.50	5.00
107-13-1	Acrylonitrile		238	ug/L	1.50	5.00
107-05-1	Allyl chloride		251	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877504	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:07	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:07		
Data File: 091917\AA209.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		244	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2610	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		238	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		229	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		264	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877504	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:07	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:07		
Data File: 091917\AA209.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.1	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	50.1	50.0	ug/L 100	(70%-131%)
Toluene-d8	52.5	50.0	ug/L 105	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877505	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 16:43	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 16:43		
Data File: 091917\AA208.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		58.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		56.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		53.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		52.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		57.0	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		56.4	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		53.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		52.8	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		52.9	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		60.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.9	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		55.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		54.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		53.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		51.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		64.5	ug/L	0.300	1.00
78-93-3	2-Butanone		210	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		51.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		238	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		53.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		270	ug/L	1.50	5.00
67-64-1	Acetone		163	ug/L	1.50	10.0
75-05-8	Acetonitrile		1350	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		53.3	ug/L	0.300	1.00
108-86-1	Bromobenzene		51.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		58.0	ug/L	0.300	1.00
75-25-2	Bromoform		61.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/08/2017 13:32	Matrix:	W
Lab Sample ID:	1203877505	Date Received:	09/13/2017 09:20		
Client Sample:	QC for batch 1701572	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-142901PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1701572	Inst:	VOAA.I	Dilution:	1
Run Date:	09/19/2017 16:43	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	09/19/2017 16:43				
Data File:	091917\AA208.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		285	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		59.2	ug/L	0.300	1.00
108-90-7	Chlorobenzene		51.7	ug/L	0.300	1.00
75-00-3	Chloroethane		50.1	ug/L	0.300	1.00
67-66-3	Chloroform		54.3	ug/L	0.300	1.00
74-87-3	Chloromethane		47.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		49.8	ug/L	0.300	1.00
74-95-3	Dibromomethane		54.4	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		32.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		52.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		52.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		52.5	ug/L	0.300	1.00
74-88-4	Iodomethane		268	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		51.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		53.6	ug/L	1.00	10.0
91-20-3	Naphthalene		52.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		52.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		52.1	ug/L	0.300	1.00
108-88-3	Toluene		52.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		55.4	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		52.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		273	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		54.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		58.1	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		105	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5500	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		54.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		52.3	ug/L	0.300	1.00
95-47-6	o-Xylene		52.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		53.3	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/08/2017 13:32	Matrix:	W
Lab Sample ID:	1203877505	Date Received:	09/13/2017 09:20		
Client Sample:	QC for batch 1701572	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-142901PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1701572	Inst:	VOAA.I	Dilution:	1
Run Date:	09/19/2017 16:43	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	09/19/2017 16:43				
Data File:	091917\AA208.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		59.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		51.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		58.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		59.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.8	50.0	110	(71%-134%)
Bromofluorobenzene	49.0	50.0	98	(70%-131%)
Toluene-d8	51.4	50.0	103	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877506	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:31	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:31		
Data File: 091917\AA210.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		47.0	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		307	ug/L	1.50	5.00
107-13-1	Acrylonitrile		258	ug/L	1.50	5.00
107-05-1	Allyl chloride		259	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877506	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:31	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:31		
Data File: 091917\AA210.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		256	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2860	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		255	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		260	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		248	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		266	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/08/2017 13:32	Matrix: W
Lab Sample ID: 1203877506	Date Received: 09/13/2017 09:20	
Client Sample: QC for batch 1701572	Client: ARSL004	Project: QC
Client ID: CAWA-17-142901PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1701572	Inst: VOAA.I	Dilution: 1
Run Date: 09/19/2017 17:31	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 09/19/2017 17:31		
Data File: 091917\AA210.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.9	50.0	106	(71%-134%)
Bromofluorobenzene	48.7	50.0	97	(70%-131%)
Toluene-d8	50.7	50.0	101	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203878616

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:56

Prep Date: 09/19/2017 15:56

Data File: 091917\AA206.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203878616

Client Sample: QC for batch 1701572

Client ID: MB for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:56

Prep Date: 09/19/2017 15:56

Data File: 091917\AA206.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Volatile
Certificate of Analysis
Sample Summary

Page 3 of 3

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203878616		
Client Sample:	QC for batch 1701572	Client:	ARSL004
Client ID:	MB for batch 1701572	Method:	SW-846:8260B
Batch ID:	1701572	Inst:	VOAA.I
Run Date:	09/19/2017 15:56	Analyst:	VXY1
Prep Date:	09/19/2017 15:56		
Data File:	091917\AA206.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.8	50.0	ug/L 110	(71%-134%)
Bromofluorobenzene	50.3	50.0	ug/L 101	(70%-131%)
Toluene-d8	52.1	50.0	ug/L 104	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.423	5.62	ug/L	0	J
	unknown	3.493	5.77	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203878617

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 14:44

Prep Date: 09/19/2017 14:44

Data File: 091917\AA203L.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		58.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		57.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		53.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		53.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		57.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		58.3	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		54.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		52.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		51.9	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		59.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.9	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		55.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		55.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		53.0	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		52.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		51.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		65.8	ug/L	0.300	1.00
78-93-3	2-Butanone		312	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		51.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		333	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		53.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		276	ug/L	1.50	5.00
67-64-1	Acetone		355	ug/L	1.50	10.0
75-05-8	Acetonitrile		1370	ug/L	8.00	25.0
107-02-8	Acrolein	U	1.50	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	1.50	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	1.50	ug/L	1.50	5.00
71-43-2	Benzene		54.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		50.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		58.7	ug/L	0.300	1.00
75-25-2	Bromoform		61.1	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Lab Sample ID: 1203878617

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 14:44

Prep Date: 09/19/2017 14:44

Data File: 091917\AA203L.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		40.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		291	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		60.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		51.7	ug/L	0.300	1.00
75-00-3	Chloroethane		51.0	ug/L	0.300	1.00
67-66-3	Chloroform		55.1	ug/L	0.300	1.00
74-87-3	Chloromethane		48.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		50.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		54.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		31.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		53.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	1.50	ug/L	1.50	5.00
100-41-4	Ethylbenzene		52.7	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.9	ug/L	0.300	1.00
74-88-4	Iodomethane		273	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	15.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		51.6	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	1.50	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	1.50	ug/L	1.50	5.00
75-09-2	Methylene chloride		54.9	ug/L	1.00	10.0
91-20-3	Naphthalene		51.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	1.50	ug/L	1.50	5.00
100-42-5	Styrene		54.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		52.0	ug/L	0.300	1.00
108-88-3	Toluene		52.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		56.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		52.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	2.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		276	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		55.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		58.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		106	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5560	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		54.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		52.2	ug/L	0.300	1.00
95-47-6	o-Xylene		52.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		53.0	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203878617		
Client Sample:	QC for batch 1701572	Client:	ARSL004
Client ID:	LCS for batch 1701572	Method:	SW-846:8260B
Batch ID:	1701572	Inst:	VOAA.I
Run Date:	09/19/2017 14:44	Analyst:	VXY1
Prep Date:	09/19/2017 14:44		
Data File:	091917\AA203L.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		60.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		51.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		58.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		60.3	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.9	50.0	108	(71%-134%)
Bromofluorobenzene	47.9	50.0	96	(70%-131%)
Toluene-d8	49.7	50.0	99	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

Page 1 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203878618

Client Sample: QC for batch 1701572

Client ID: LCS for batch 1701572

Batch ID: 1701572

Run Date: 09/19/2017 15:32

Prep Date: 09/19/2017 15:32

Data File: 091917\AA205.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOAA.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	0.300	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	0.300	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	0.300	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	0.300	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	0.300	ug/L	0.300	1.00
78-93-3	2-Butanone	U	1.50	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		49.6	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	0.300	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	1.50	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	0.300	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	0.300	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	1.50	ug/L	1.50	5.00
67-64-1	Acetone	U	1.50	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	8.00	ug/L	8.00	25.0
107-02-8	Acrolein		307	ug/L	1.50	5.00
107-13-1	Acrylonitrile		255	ug/L	1.50	5.00
107-05-1	Allyl chloride		270	ug/L	1.50	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	0.300	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	0.300	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	1.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2708

Matrix: WATER

Lab Sample ID: 1203878618

Client Sample: QC for batch 1701572

Client: ARSL004

Project: QC

Client ID: LCS for batch 1701572

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1701572

Inst: VOAA.I

Dilution: 1

Run Date: 09/19/2017 15:32

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 09/19/2017 15:32

Data File: 091917\AA205.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	0.300	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	1.50	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	1.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	1.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	1.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	0.300	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		261	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	0.300	ug/L	0.300	1.00
74-88-4	Iodomethane	U	1.50	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2790	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	0.300	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		255	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		259	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	1.00	ug/L	1.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
107-12-0	Propionitrile		244	ug/L	1.50	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		289	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	1.50	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	0.300	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	15.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	0.300	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	0.300	ug/L	0.300	1.00
95-47-6	o-Xylene	U	0.300	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	0.300	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Matrix:	WATER
Lab Sample ID:	1203878618		
Client Sample:	QC for batch 1701572	Client:	ARSL004
Client ID:	LCS for batch 1701572	Method:	SW-846:8260B
Batch ID:	1701572	Inst:	VOAA.I
Run Date:	09/19/2017 15:32	Analyst:	VXY1
Prep Date:	09/19/2017 15:32		
Data File:	091917\AA205.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.6	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	49.2	50.0	ug/L 98	(70%-131%)
Toluene-d8	51.4	50.0	ug/L 103	(74%-124%)

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Procedure:	Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1699759
Prep Batch Number:	1699758

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

Sample ID	Client ID
432512008	CAWA-17-143059
432512011	CAWA-17-143061
1203872658	Method Blank (MB)
1203872659	Laboratory Control Sample (LCS)
1203872660	432512008(CAWA-17-143059) Matrix Spike (MS)
1203872661	432512008(CAWA-17-143059) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

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-009 REV# 39.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples 432512008 (CAWA-17-143059) and 432512011 (CAWA-17-143061) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

Samples (See Below) displayed failing surrogate recoveries. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203872660 (CAWA-17-143059MS)	2-Fluorophenol	97* (15%-88%)
1203872661 (CAWA-17-143059MSD)	2-Fluorophenol	122* (15%-88%)
	Phenol-d5	93* (15%-91%)

Sample (See Below) did not meet surrogate recovery acceptance criteria. The sample was re-extracted out of holding and met acceptance criteria for all surrogates. Both sets of data results have been reported.

Sample	Analyte	Value
432512011 (CAWA-17-143061)	2,4,6-Tribromophenol	11* (32%-124%)
	2-Fluorobiphenyl	10* (32%-112%)
	Nitrobenzene-d5	12* (36%-115%)

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 432512008 (CAWA-17-143059) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and the target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203872660 (CAWA-17-143059MS)	Several	See applicable report
1203872661 (CAWA-17-143059MSD)	Several	See applicable report

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications

All samples in this SDG in this batch met the specified holding time. GEL assigns holding times based on the associated methodology that 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.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:

Manual Integrations

Manual integrations were not required on samples in this batch in this SDG for detected target analytes or surrogates.

TIC Comment

Tentatively identified compounds (TIC) were requested for samples 432512008 (CAWA-17-143059) and 432512011 (CAWA-17-143061) in this SDG in this batch.

Additional Comments

Additional comments were not required for the SDG associated samples in this batch.

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSD4.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Method/Analysis Information

Procedure:	Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1701047
Prep Batch Number:	1701046

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3510C/8270D:

Sample ID	Client ID
432512011	CAWA-17-143061
1203876065	Method Blank (MB)
1203876066	Laboratory Control Sample (LCS)
1203877908	Laboratory Control Sample Duplicate (LCSD)
1203876072	432872003(CAWA-17-142918) Matrix Spike (MS)
1203876073	432872003(CAWA-17-142918) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

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-009 REV# 39.

Raw data reports are processed and reviewed by the analyst using the data analysis software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package. The various calibration mixes may not be calibrated using all of the calibration levels. In addition, not all of the mixes are calibrated using the same levels.

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG) in this batch. A second source initial calibration verification (ICV) was included in the standard section directly behind the initial calibration.

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for sample 432512011 (CAWA-17-143061) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG in this batch met the acceptance criteria.

Surrogate Recoveries

All the surrogate recoveries were within the established acceptance criteria for this SDG in this batch.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was analyzed along with an MS/MSD pair in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. Since the target analytes were not detected in the associated samples above the reporting limits, the positive bias had no adverse impact on the data.

Sample	Analyte	Value
--------	---------	-------

1203876066 (LCS)	Several	See applicable report
1203877908 (LCSD)	Several	See applicable report

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD values between the LCS and LCSD (See Below) did not meet the acceptance limits for one or more analytes. Since the individual LCS and LCSD recoveries for these analytes were within the established acceptance criteria, the failures did not adversely impact the reported data.

Sample	Analyte	Value
1203876066 (LCS) and 1203877908 (LCSD)	Benzidine	43* (0%-30%)

QC Sample Designation

Sample 432872003 (CAWA-17-142918) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and the target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203876072 (CAWA-17-142918MS)	Pentachlorophenol	124* (35%-121%)
1203876073 (CAWA-17-142918MSD)	4-Nitrophenol	86* (17%-85%)

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD met the acceptance limits.

Internal Standard (ISTD) Acceptance

The internal standard responses used to quantitate the requested target analytes were within the required acceptance criteria for the SDG associated samples in this batch.

Technical Information:

Holding Time Specifications

Sample (See Below) was re-extracted out of holding due to QC failure. The failure did not confirm, so both sets of results are reported and have been qualified accordingly.

Sample	Value
432512011 (CAWA-17-143061)	Received 08-SEP-17, within holding, prepped 19-SEP-17, out of holding 13-SEP-17

GEL assigns holding times based on the associated methodology that 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.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch unless confirmations or dilutions were required.

Miscellaneous Information:**Manual Integrations**

Manual integrations were not required on samples in this batch in this SDG for detected target analytes or surrogates.

TIC Comment

Tentatively identified compounds (TIC) were requested for sample 432512011 (CAWA-17-143061) in this SDG in this batch.

Additional Comments

Additional comments were not required for the SDG associated samples in this batch.

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSD4.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

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: 2017-2708 GEL Work Order: 432512


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- E Concentration of the target analyte exceeds the instrument calibration range
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- h Preparation or preservation holding time was exceeded
- 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: Barbara Bailey

Date: 04 OCT 2017

Title: Data Validator

Sample Data Summary

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:23	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1309.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	3.00	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	3.00	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
122-66-7	Azobenzene	U	3.00	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	3.00	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	3.00	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	3.00	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	3.00	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	3.00	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	3.00	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	5.00	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	0.410	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	3.00	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	3.00	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	3.00	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	3.00	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	3.00	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	3.00	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	3.30	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	3.00	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	3.00	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	0.300	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	0.300	ug/L	0.300	1.00
62-53-3	Aniline	U	4.20	ug/L	4.20	10.0
120-12-7	Anthracene	U	0.300	ug/L	0.300	1.00
1912-24-9	Atrazine	U	3.00	ug/L	3.00	10.0
92-87-5	Benzidine	U	3.90	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	0.300	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	0.300	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	U	0.300	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	0.300	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:23	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s091317.B\411309.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.300	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	6.00	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	3.00	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	3.00	ug/L	3.00	10.0
218-01-9	Chrysene	U	0.300	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	3.00	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	3.00	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	0.300	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	3.00	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	3.00	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	3.00	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	3.00	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	0.300	ug/L	0.300	1.00
86-73-7	Fluorene	U	0.300	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	3.00	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	3.00	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	3.00	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	3.00	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.300	ug/L	0.300	1.00
78-59-1	Isophorone	U	3.50	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	3.00	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	3.00	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	3.00	ug/L	3.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	3.00	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	3.00	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	0.300	ug/L	0.300	1.00
108-95-2	Phenol	U	3.00	ug/L	3.00	10.0
129-00-0	Pyrene	U	0.300	ug/L	0.300	1.00
110-86-1	Pyridine	U	3.00	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	3.00	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	3.00	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	3.00	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	3.00	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 432512008	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143059	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:23	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1309.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	3.70	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	3.00	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	93.3	100	ug/L	93 (32%-124%)
2-Fluorobiphenyl	34.8	50.0	ug/L	70 (32%-112%)
2-Fluorophenol	59.3	100	ug/L	59 (15%-88%)
Nitrobenzene-d5	41.8	50.0	ug/L	84 (36%-115%)
Phenol-d5	37.1	100	ug/L	37 (15%-91%)
p-Terphenyl-d14	48.9	50.0	ug/L	98 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
019354-27-9	Furan, tetrahydro-2-(methoxymethyl)	1.826	7.11	ug/L	86	NJ
1000154-28-6	Cyclopentene, 1,2,3,4,5-pentamethy	4.169	9.96	ug/L	91	NJ
	unknown	4.511	4.1	ug/L	0	J

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 930 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1312.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	3.23	ug/L	3.23	10.8
120-82-1	1,2,4-Trichlorobenzene	U	3.23	ug/L	3.23	10.8
95-50-1	1,2-Dichlorobenzene	U	3.23	ug/L	3.23	10.8
122-66-7	Azobenzene	U	3.23	ug/L	3.23	10.8
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	3.23	ug/L	3.23	10.8
106-46-7	1,4-Dichlorobenzene	U	3.23	ug/L	3.23	10.8
123-91-1	1,4-Dioxane	U	3.23	ug/L	3.23	10.8
90-12-0	1-Methylnaphthalene	U	0.323	ug/L	0.323	1.08
58-90-2	2,3,4,6-Tetrachlorophenol	U	3.23	ug/L	3.23	10.8
95-95-4	2,4,5-Trichlorophenol	U	3.23	ug/L	3.23	10.8
88-06-2	2,4,6-Trichlorophenol	U	3.23	ug/L	3.23	10.8
120-83-2	2,4-Dichlorophenol	U	3.23	ug/L	3.23	10.8
105-67-9	2,4-Dimethylphenol	U	3.23	ug/L	3.23	10.8
51-28-5	2,4-Dinitrophenol	U	5.38	ug/L	5.38	21.5
121-14-2	2,4-Dinitrotoluene	U	3.23	ug/L	3.23	10.8
606-20-2	2,6-Dinitrotoluene	U	3.23	ug/L	3.23	10.8
91-58-7	2-Chloronaphthalene	U	0.441	ug/L	0.441	1.08
95-57-8	2-Chlorophenol	U	3.23	ug/L	3.23	10.8
534-52-1	2-Methyl-4,6-dinitrophenol	U	3.23	ug/L	3.23	10.8
91-57-6	2-Methylnaphthalene	U	0.323	ug/L	0.323	1.08
88-75-5	2-Nitrophenol	U	3.23	ug/L	3.23	10.8
91-94-1	3,3'-Dichlorobenzidine	U	3.23	ug/L	3.23	10.8
101-55-3	4-Bromophenylphenylether	U	3.23	ug/L	3.23	10.8
59-50-7	Parachlorometa cresol	U	3.23	ug/L	3.23	10.8
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	3.55	ug/L	3.55	10.8
7005-72-3	4-Chlorophenylphenylether	U	3.23	ug/L	3.23	10.8
100-02-7	4-Nitrophenol	U	3.23	ug/L	3.23	10.8
83-32-9	Acenaphthene	U	0.323	ug/L	0.323	1.08
208-96-8	Acenaphthylene	U	0.323	ug/L	0.323	1.08
62-53-3	Aniline	U	4.52	ug/L	4.52	10.8
120-12-7	Anthracene	U	0.323	ug/L	0.323	1.08
1912-24-9	Atrazine	U	3.23	ug/L	3.23	10.8
92-87-5	Benzidine	U	4.19	ug/L	4.19	10.8
56-55-3	Benzo(a)anthracene	U	0.323	ug/L	0.323	1.08
50-32-8	Benzo(a)pyrene	U	0.323	ug/L	0.323	1.08
205-99-2	Benzo(b)fluoranthene	U	0.323	ug/L	0.323	1.08
191-24-2	Benzo(ghi)perylene	U	0.323	ug/L	0.323	1.08

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 930 mL	Final Volume: 1 mL
Data File: s091317.B\411312.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.323	ug/L	0.323	1.08
65-85-0	Benzoic acid	U	6.45	ug/L	6.45	21.5
100-51-6	Benzyl alcohol	U	3.23	ug/L	3.23	10.8
85-68-7	Butylbenzylphthalate	U	3.23	ug/L	3.23	10.8
218-01-9	Chrysene	U	0.323	ug/L	0.323	1.08
84-74-2	Di-n-butylphthalate	U	3.23	ug/L	3.23	10.8
117-84-0	Di-n-octylphthalate	U	3.23	ug/L	3.23	10.8
53-70-3	Dibenzo(a,h)anthracene	U	0.323	ug/L	0.323	1.08
132-64-9	Dibenzofuran	U	3.23	ug/L	3.23	10.8
84-66-2	Diethylphthalate	U	3.23	ug/L	3.23	10.8
131-11-3	Dimethylphthalate	U	3.23	ug/L	3.23	10.8
88-85-7	Dinoseb	U	3.23	ug/L	3.23	10.8
122-39-4	Diphenylamine	U	3.23	ug/L	3.23	10.8
206-44-0	Fluoranthene	U	0.323	ug/L	0.323	1.08
86-73-7	Fluorene	U	0.323	ug/L	0.323	1.08
118-74-1	Hexachlorobenzene	U	3.23	ug/L	3.23	10.8
87-68-3	Hexachlorobutadiene	U	3.23	ug/L	3.23	10.8
77-47-4	Hexachlorocyclopentadiene	U	3.23	ug/L	3.23	10.8
67-72-1	Hexachloroethane	U	3.23	ug/L	3.23	10.8
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.323	ug/L	0.323	1.08
78-59-1	Isophorone	U	3.76	ug/L	3.76	10.8
62-75-9	N-Methyl-N-nitrosomethylamine	U	3.23	ug/L	3.23	10.8
924-16-3	N-Nitrosodi-n-butylamine	U	3.23	ug/L	3.23	10.8
55-18-5	N-Nitrosodiethylamine	U	3.23	ug/L	3.23	10.8
621-64-7	N-Nitrosodi--n-propylamine	U	3.23	ug/L	3.23	10.8
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	3.23	ug/L	3.23	10.8
91-20-3	Naphthalene	U	0.323	ug/L	0.323	1.08
98-95-3	Nitrobenzene	U	3.23	ug/L	3.23	10.8
608-93-5	Pentachlorobenzene	U	3.23	ug/L	3.23	10.8
87-86-5	Pentachlorophenol	U	3.23	ug/L	3.23	10.8
85-01-8	Phenanthrene	U	0.323	ug/L	0.323	1.08
108-95-2	Phenol	U	3.23	ug/L	3.23	10.8
129-00-0	Pyrene	U	0.323	ug/L	0.323	1.08
110-86-1	Pyridine	U	3.23	ug/L	3.23	10.8
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	3.23	ug/L	3.23	10.8
111-91-1	bis(2-Chloroethoxy)methane	U	3.23	ug/L	3.23	10.8
111-44-4	bis(2-Chloroethyl) ether	U	3.23	ug/L	3.23	10.8
117-81-7	bis(2-Ethylhexyl)phthalate	U	3.23	ug/L	3.23	10.8

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 930 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1312.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	3.98	ug/L	3.98	10.8
99-09-2	3-Nitroaniline	U	3.23	ug/L	3.23	10.8
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	3.23	ug/L	3.23	10.8
88-74-4	2-Nitroaniline	U	3.23	ug/L	3.23	10.8
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	3.23	ug/L	3.23	10.8
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	11.9	108	ug/L 11 *	(32%-124%)
2-Fluorobiphenyl	10.8	53.8	ug/L 10 *	(32%-112%)
2-Fluorophenol	32.1	108	ug/L 30	(15%-88%)
Nitrobenzene-d5	10.8	53.8	ug/L 12 *	(36%-115%)
Phenol-d5	22.5	108	ug/L 21	(15%-91%)
p-Terphenyl-d14	19.1	53.8	ug/L 36	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	1.821	5.16	ug/L	0	J
1000154-28-6	Cyclopentene, 1,2,3,4,5-pentamethy	4.163	6.51	ug/L	87	NJ

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061RE	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 19:33	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 940 mL	Final Volume: 1 mL
Data File: s091917.B\s4i1911.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	Uh	3.19	ug/L	3.19	10.6
120-82-1	1,2,4-Trichlorobenzene	Uh	3.19	ug/L	3.19	10.6
95-50-1	1,2-Dichlorobenzene	Uh	3.19	ug/L	3.19	10.6
122-66-7	Azobenzene	Uh	3.19	ug/L	3.19	10.6
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	Uh	3.19	ug/L	3.19	10.6
106-46-7	1,4-Dichlorobenzene	Uh	3.19	ug/L	3.19	10.6
123-91-1	1,4-Dioxane	Uh	3.19	ug/L	3.19	10.6
90-12-0	1-Methylnaphthalene	Uh	0.319	ug/L	0.319	1.06
58-90-2	2,3,4,6-Tetrachlorophenol	Uh	3.19	ug/L	3.19	10.6
95-95-4	2,4,5-Trichlorophenol	Uh	3.19	ug/L	3.19	10.6
88-06-2	2,4,6-Trichlorophenol	Uh	3.19	ug/L	3.19	10.6
120-83-2	2,4-Dichlorophenol	Uh	3.19	ug/L	3.19	10.6
105-67-9	2,4-Dimethylphenol	Uh	3.19	ug/L	3.19	10.6
51-28-5	2,4-Dinitrophenol	Uh	5.32	ug/L	5.32	21.3
121-14-2	2,4-Dinitrotoluene	Uh	3.19	ug/L	3.19	10.6
606-20-2	2,6-Dinitrotoluene	Uh	3.19	ug/L	3.19	10.6
91-58-7	2-Chloronaphthalene	Uh	0.436	ug/L	0.436	1.06
95-57-8	2-Chlorophenol	Uh	3.19	ug/L	3.19	10.6
534-52-1	2-Methyl-4,6-dinitrophenol	Uh	3.19	ug/L	3.19	10.6
91-57-6	2-Methylnaphthalene	Uh	0.319	ug/L	0.319	1.06
88-75-5	2-Nitrophenol	Uh	3.19	ug/L	3.19	10.6
91-94-1	3,3'-Dichlorobenzidine	Uh	3.19	ug/L	3.19	10.6
101-55-3	4-Bromophenylphenylether	Uh	3.19	ug/L	3.19	10.6
59-50-7	Parachlorometa cresol	Uh	3.19	ug/L	3.19	10.6
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	Uh	3.51	ug/L	3.51	10.6
7005-72-3	4-Chlorophenylphenylether	Uh	3.19	ug/L	3.19	10.6
100-02-7	4-Nitrophenol	Uh	3.19	ug/L	3.19	10.6
83-32-9	Acenaphthene	Uh	0.319	ug/L	0.319	1.06
208-96-8	Acenaphthylene	Uh	0.319	ug/L	0.319	1.06
62-53-3	Aniline	Uh	4.47	ug/L	4.47	10.6
120-12-7	Anthracene	Uh	0.319	ug/L	0.319	1.06
1912-24-9	Atrazine	Uh	3.19	ug/L	3.19	10.6
92-87-5	Benzidine	Uh	4.15	ug/L	4.15	10.6
56-55-3	Benzo(a)anthracene	Uh	0.319	ug/L	0.319	1.06
50-32-8	Benzo(a)pyrene	Uh	0.319	ug/L	0.319	1.06
205-99-2	Benzo(b)fluoranthene	Uh	0.319	ug/L	0.319	1.06
191-24-2	Benzo(ghi)perylene	Uh	0.319	ug/L	0.319	1.06

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/06/2017 08:15	Matrix:	W
Lab Sample ID:	432512011	Date Received:	09/08/2017 09:20		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-143061RE	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1701047	Inst:	MSD4.I	Dilution:	1
Run Date:	09/19/2017 19:33	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	09/19/2017 10:10	Aliquot:	940 mL	Final Volume:	1 mL
Data File:	s091917.B\s4i1911.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	Uh	0.319	ug/L	0.319	1.06
65-85-0	Benzoic acid	Uh	6.38	ug/L	6.38	21.3
100-51-6	Benzyl alcohol	Uh	3.19	ug/L	3.19	10.6
85-68-7	Butylbenzylphthalate	Uh	3.19	ug/L	3.19	10.6
218-01-9	Chrysene	Uh	0.319	ug/L	0.319	1.06
84-74-2	Di-n-butylphthalate	Uh	3.19	ug/L	3.19	10.6
117-84-0	Di-n-octylphthalate	Uh	3.19	ug/L	3.19	10.6
53-70-3	Dibenzo(a,h)anthracene	Uh	0.319	ug/L	0.319	1.06
132-64-9	Dibenzofuran	Uh	3.19	ug/L	3.19	10.6
84-66-2	Diethylphthalate	Uh	3.19	ug/L	3.19	10.6
131-11-3	Dimethylphthalate	Uh	3.19	ug/L	3.19	10.6
88-85-7	Dinoseb	Uh	3.19	ug/L	3.19	10.6
122-39-4	Diphenylamine	Uh	3.19	ug/L	3.19	10.6
206-44-0	Fluoranthene	Uh	0.319	ug/L	0.319	1.06
86-73-7	Fluorene	Uh	0.319	ug/L	0.319	1.06
118-74-1	Hexachlorobenzene	Uh	3.19	ug/L	3.19	10.6
87-68-3	Hexachlorobutadiene	Uh	3.19	ug/L	3.19	10.6
77-47-4	Hexachlorocyclopentadiene	Uh	3.19	ug/L	3.19	10.6
67-72-1	Hexachloroethane	Uh	3.19	ug/L	3.19	10.6
193-39-5	Indeno(1,2,3-cd)pyrene	Uh	0.319	ug/L	0.319	1.06
78-59-1	Isophorone	Uh	3.72	ug/L	3.72	10.6
62-75-9	N-Methyl-N-nitrosomethylamine	Uh	3.19	ug/L	3.19	10.6
924-16-3	N-Nitrosodi-n-butylamine	Uh	3.19	ug/L	3.19	10.6
55-18-5	N-Nitrosodiethylamine	Uh	3.19	ug/L	3.19	10.6
621-64-7	N-Nitrosodi--n-propylamine	Uh	3.19	ug/L	3.19	10.6
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	Uh	3.19	ug/L	3.19	10.6
91-20-3	Naphthalene	Uh	0.319	ug/L	0.319	1.06
98-95-3	Nitrobenzene	Uh	3.19	ug/L	3.19	10.6
608-93-5	Pentachlorobenzene	Uh	3.19	ug/L	3.19	10.6
87-86-5	Pentachlorophenol	Uh	3.19	ug/L	3.19	10.6
85-01-8	Phenanthrene	Uh	0.319	ug/L	0.319	1.06
108-95-2	Phenol	Uh	3.19	ug/L	3.19	10.6
129-00-0	Pyrene	Uh	0.319	ug/L	0.319	1.06
110-86-1	Pyridine	Uh	3.19	ug/L	3.19	10.6
108-60-1	bis(2-Chloro-1-methylethyl)ether	Uh	3.19	ug/L	3.19	10.6
111-91-1	bis(2-Chloroethoxy)methane	Uh	3.19	ug/L	3.19	10.6
111-44-4	bis(2-Chloroethyl) ether	Uh	3.19	ug/L	3.19	10.6
117-81-7	bis(2-Ethylhexyl)phthalate	Uh	3.19	ug/L	3.19	10.6

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 08:15	Matrix: W
Lab Sample ID: 432512011	Date Received: 09/08/2017 09:20	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-143061RE	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 19:33	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 940 mL	Final Volume: 1 mL
Data File: s091917.B\s4i1911.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	Uh	3.94	ug/L	3.94	10.6
99-09-2	3-Nitroaniline	Uh	3.19	ug/L	3.19	10.6
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	Uh	3.19	ug/L	3.19	10.6
88-74-4	2-Nitroaniline	Uh	3.19	ug/L	3.19	10.6
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	Uh	3.19	ug/L	3.19	10.6
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	95.4	106	ug/L	90	(32%-124%)
2-Fluorobiphenyl	32.9	53.2	ug/L	62	(32%-112%)
2-Fluorophenol	58.9	106	ug/L	55	(15%-88%)
Nitrobenzene-d5	40.9	53.2	ug/L	77	(36%-115%)
Phenol-d5	38.2	106	ug/L	36	(15%-91%)
p-Terphenyl-d14	55.8	53.2	ug/L	105	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	1.789	5.93	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203872658	MB for batch 1699758	51	32	76	54	91	95
1203872659	LCS for batch 1699758	52	34	76	69	111	103
432512008	CAWA-17-143059	59	37	84	70	93	98
1203872660	CAWA-17-143059MS	97 *	78	76	63	92	89
1203872661	CAWA-17-143059MSD	122 *	93 *	88	70	107	91
432512011	CAWA-17-143061	30	21	12 *	10 *	11 *	36
1203876065	MB for batch 1701046	63	39	96	57	114	115
1203876066	LCS for batch 1701046	74	46	96	76	112	119
1203877908	LCSD for batch 1701046	72	46	88	68	116	119
432512011	CAWA-17-143061RE	55	36	77	62	90	105
1203876072	CAWA-17-142918MS	70	56	79	72	116	97
1203876073	CAWA-17-142918MSD	71	59	77	68	110	94

Surrogate**Acceptance Limits**

2FP	= 2-Fluorophenol	(15%-88%)
PHL	= Phenol-d5	(15%-91%)
NBZ	= Nitrobenzene-d5	(36%-115%)
FBP	= 2-Fluorobiphenyl	(32%-112%)
TBP	= 2,4,6-Tribromophenol	(32%-124%)
TPH	= p-Terphenyl-d14	(36%-121%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1699758

Matrix: WATER

Lab Sample ID 1203872659

Instrument: MSD4.I

Analysis Date: 09/13/2017 19:55

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	25.4	51	30-88
110-86-1	LCS Pyridine	50.0	0.0	27.3	55	27-89
62-53-3	LCS Aniline	50.0	0.0	43.9	88	49-112
108-95-2	LCS Phenol	50.0	0.0	19.2	38	16-82
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	45.2	90	51-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	42.3	85	49-105
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	29.1	58	37-95
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	30.0	60	38-96
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	31.8	64	39-97
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	45.8	92	44-123
100-51-6	LCS Benzyl alcohol	50.0	0.0	41.1	82	44-102
95-48-7	LCS o-Cresol	50.0	0.0	38.4	77	41-101
65794-96-9	LCS m,p-Cresols	50.0	0.0	41.8	84	43-102
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	52.4	105	54-115
67-72-1	LCS Hexachloroethane	50.0	0.0	28.4	57	36-96
98-95-3	LCS Nitrobenzene	50.0	0.0	43.2	86	53-115
78-59-1	LCS Isophorone	50.0	0.0	46.5	93	56-117
88-75-5	LCS 2-Nitrophenol	50.0	0.0	42.6	85	51-113
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	37.8	76	51-104
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	44.9	90	55-114
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	43.5	87	53-109
65-85-0	LCS Benzoic acid	100	0.0	34.2	34	21-74

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1699758

Matrix: WATER

Lab Sample ID 1203872659

Instrument: MSD4.I

Analysis Date: 09/13/2017 19:55

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	53.0	106	65-136
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	27.9	56	35-98
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	52.9	106	55-115
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	34.4	69	42-103
91-20-3	LCS Naphthalene	50.0	0.0	34.6	69	44-102
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	34.7	69	45-108
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	21.8	44	34-89
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	44.2	88	55-120
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	48.5	97	55-116
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	33.7	67	44-107
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	48.9	98	53-121
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	59.5	119	61-139
131-11-3	LCS Dimethylphthalate	50.0	0.0	47.2	94	60-122
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	48.8	98	59-122
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	53.9	108	57-124
208-96-8	LCS Acenaphthylene	50.0	0.0	39.4	79	50-113
83-32-9	LCS Acenaphthene	50.0	0.0	42.1	84	49-112
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	52.0	104	34-122
132-64-9	LCS Dibenzofuran	50.0	0.0	41.4	83	50-111
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	52.1	104	54-122
84-66-2	LCS Diethylphthalate	50.0	0.0	49.9	100	57-122
100-02-7	LCS 4-Nitrophenol	50.0	0.0	15.0	30	15-137

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1699758

Matrix: WATER

Lab Sample ID 1203872659

Instrument: MSD4.I

Analysis Date: 09/13/2017 19:55

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS Fluorene	50.0	0.0	45.1	90	52-114
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	44.9	90	52-121
100-01-6	LCS 4-Nitroaniline <i>p-Nitroaniline</i>	50.0	0.0	52.4	105	44-137
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	50.1	100	45-124
122-39-4	LCS Diphenylamine	50.0	0.0	41.3	83	55-113
122-66-7	LCS Azobenzene <i>1,2-Diphenylhydrazine</i>	50.0	0.0	41.4	83	53-115
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	42.4	85	54-116
118-74-1	LCS Hexachlorobenzene	50.0	0.0	41.8	84	54-115
87-86-5	LCS Pentachlorophenol	50.0	0.0	58.1	116	41-116
85-01-8	LCS Phenanthrene	50.0	0.0	44.7	89	55-110
120-12-7	LCS Anthracene	50.0	0.0	44.5	89	56-112
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	47.9	96	57-123
206-44-0	LCS Fluoranthene	50.0	0.0	51.9	104	54-118
129-00-0	LCS Pyrene	50.0	0.0	48.0	96	49-121
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	47.7	95	52-125
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	48.0	96	52-125
56-55-3	LCS Benzo(a)anthracene	50.0	0.0	45.5	91	57-112
218-01-9	LCS Chrysene	50.0	0.0	45.3	91	58-117
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	40.7	81	50-129
205-99-2	LCS Benzo(b)fluoranthene	50.0	0.0	46.9	94	41-118
207-08-9	LCS Benzo(k)fluoranthene	50.0	0.0	47.1	94	42-121
50-32-8	LCS Benzo(a)pyrene	50.0	0.0	43.6	87	40-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1699758

Matrix: WATER

Lab Sample ID 1203872659

Instrument: MSD4.I

Analysis Date: 09/13/2017 19:55

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS Indeno(1,2,3-cd)pyrene	50.0	0.0	42.2	84	34-125
53-70-3	LCS Dibenzo(a,h)anthracene	50.0	0.0	42.2	84	38-129
191-24-2	LCS Benzo(ghi)perylene	50.0	0.0	41.4	83	33-131
123-91-1	LCS 1,4-Dioxane	50.0	0.0	27.9	56	38-78
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	46.2	92	54-113
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	33.7	67	44-102
1912-24-9	LCS Atrazine	50.0	0.0	48.5	97	60-131
92-87-5	LCS Benzidine	100	0.0	81.4	81	20-144
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	49.2	98	43-127
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	30.2	60	39-99

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-143059MS

Matrix: W

Lab Sample ID 1203872660

Instrument: MSD4.I

Analysis Date: 09/13/2017 20:51

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	116	0.00 U	112	96	25-106
110-86-1	MS Pyridine	116	0.00 U	122	105 *	24-93
62-53-3	MS Aniline	116	0.00 U	137	118 *	37-113
108-95-2	MS Phenol	116	0.00 U	101	87 *	23-82
111-44-4	MS bis(2-Chloroethyl) ether	116	0.00 U	134	115 *	39-114
95-57-8	MS 2-Chlorophenol	116	0.00 U	131	112 *	37-108
541-73-1	MS 1,3-Dichlorobenzene	116	0.00 U	96.4	83	27-97
106-46-7	MS 1,4-Dichlorobenzene	116	0.00 U	98.3	85	28-97
95-50-1	MS 1,2-Dichlorobenzene	116	0.00 U	104	90	28-99
108-60-1	MS bis(2-Chloro-1-methylethyl)et	116	0.00 U	141	121	32-127
100-51-6	MS Benzyl alcohol	116	0.00 U	141	121 *	37-116
95-48-7	MS o-Cresol	116	0.00 U	131	113 *	34-109
65794-96-9	MS m,p-Cresols	116	0.00 U	151	130 *	36-120
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	116	0.00 U	158	136 *	42-118
67-72-1	MS Hexachloroethane	116	0.00 U	95.9	82	29-94
98-95-3	MS Nitrobenzene	116	0.00 U	101	87	38-123
78-59-1	MS Isophorone	116	0.00 U	105	90	43-120
88-75-5	MS 2-Nitrophenol	116	0.00 U	99.2	85	39-115
105-67-9	MS 2,4-Dimethylphenol	116	0.00 U	85.9	74	39-107
111-91-1	MS bis(2-Chloroethoxy)methane	116	0.00 U	102	87	42-118
120-83-2	MS 2,4-Dichlorophenol	116	0.00 U	99.6	86	40-111
65-85-0	MS Benzoic acid	233	0.00 U	116	50	17-95

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-143059MS

Matrix: W

Lab Sample ID 1203872660

Instrument: MSD4.I

Analysis Date: 09/13/2017 20:51

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	116	0.00	U	122	105	44-138
87-68-3	MS	Hexachlorobutadiene	116	0.00	U	71.5	61	26-98
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00	U	120	103	41-122
91-57-6	MS	2-Methylnaphthalene	116	0.00	U	90.1	78	29-109
91-20-3	MS	Naphthalene	116	0.00	U	86.1	74	31-108
90-12-0	MS	1-Methylnaphthalene	116	0.00	U	90.9	78	33-112
77-47-4	MS	Hexachlorocyclopentadiene	116	0.00	U	60.2	52	26-79
88-06-2	MS	2,4,6-Trichlorophenol	116	0.00	U	91.5	79	39-124
95-95-4	MS	2,4,5-Trichlorophenol	116	0.00	U	99.3	85	42-120
91-58-7	MS	2-Chloronaphthalene	116	0.00	U	81.3	70	29-113
88-74-4	MS	2-Nitroaniline o-Nitroaniline	116	0.00	U	95.8	82	41-121
99-09-2	MS	3-Nitroaniline m-Nitroaniline	116	0.00	U	112	96	42-144
131-11-3	MS	Dimethylphthalate	116	0.00	U	94.4	81	45-128
606-20-2	MS	2,6-Dinitrotoluene	116	0.00	U	96.6	83	46-124
121-14-2	MS	2,4-Dinitrotoluene	116	0.00	U	105	90	45-125
208-96-8	MS	Acenaphthylene	116	0.00	U	88.5	76	35-120
83-32-9	MS	Acenaphthene	116	0.00	U	95.5	82	35-117
51-28-5	MS	2,4-Dinitrophenol	116	0.00	U	104	90	27-122
132-64-9	MS	Dibenzofuran	116	0.00	U	91.0	78	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	116	0.00	U	104	90	40-128
84-66-2	MS	Diethylphthalate	116	0.00	U	99.6	86	43-127
100-02-7	MS	4-Nitrophenol	116	0.00	U	76.3	66	17-85

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-143059MS

Matrix: W

Lab Sample ID 1203872660

Instrument: MSD4.I

Analysis Date: 09/13/2017 20:51

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	116	0.00	U	96.2	83	39-117
7005-72-3	MS	4-Chlorophenylphenylether	116	0.00	U	95.8	82	39-121
100-01-6	MS	4-Nitroaniline <i>p-Nitroaniline</i>	116	0.00	U	93.7	81	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	116	0.00	U	101	87	32-126
122-39-4	MS	Diphenylamine	116	0.00	U	84.7	73	37-118
122-66-7	MS	Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00	U	88.0	76	38-120
101-55-3	MS	4-Bromophenylphenylether	116	0.00	U	90.2	78	39-121
118-74-1	MS	Hexachlorobenzene	116	0.00	U	90.7	78	40-118
87-86-5	MS	Pentachlorophenol	116	0.00	U	123	106	35-121
85-01-8	MS	Phenanthrene	116	0.00	U	93.0	80	40-115
120-12-7	MS	Anthracene	116	0.00	U	92.1	79	38-120
84-74-2	MS	Di-n-butylphthalate	116	0.00	U	103	88	41-128
206-44-0	MS	Fluoranthene	116	0.00	U	106	91	41-119
129-00-0	MS	Pyrene	116	0.00	U	96.8	83	35-128
85-68-7	MS	Butylbenzylphthalate	116	0.00	U	95.3	82	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	116	0.00	U	93.0	80	38-131
56-55-3	MS	Benzo(a)anthracene	116	0.00	U	92.5	80	39-120
218-01-9	MS	Chrysene	116	0.00	U	93.5	80	41-124
117-84-0	MS	Di-n-octylphthalate	116	0.00	U	85.1	73	37-134
205-99-2	MS	Benzo(b)fluoranthene	116	0.00	U	94.2	81	31-122
207-08-9	MS	Benzo(k)fluoranthene	116	0.00	U	99.2	85	33-123
50-32-8	MS	Benzo(a)pyrene	116	0.00	U	90.3	78	32-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-143059MS

Matrix: W

Lab Sample ID 1203872660

Instrument: MSD4.I

Analysis Date: 09/13/2017 20:51

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS Indeno(1,2,3-cd)pyrene	116	0.00 U	81.9	70	27-121
53-70-3	MS Dibenzo(a,h)anthracene	116	0.00 U	82.8	71	30-125
191-24-2	MS Benzo(ghi)perylene	116	0.00 U	79.3	68	24-126
123-91-1	MS 1,4-Dioxane	116	0.00 U	123	106	24-110
930-55-2	MS N-Nitrosopyrrolidine	116	0.00 U	147	126 *	47-119
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	116	0.00 U	85.5	74	32-101
1912-24-9	MS Atrazine	116	0.00 U	98.4	85	42-129
92-87-5	MS Benzidine	233	0.00 U	171	73	15-130
91-94-1	MS 3,3'-Dichlorobenzidine	116	0.00 U	99.4	86	34-124
120-82-1	MS 1,2,4-Trichlorobenzene	116	0.00 U	78.7	68	26-102

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-143059MSD

Matrix: W

Lab Sample ID 1203872661

Instrument: MSD4.I

Analysis Date: 09/13/2017 21:19

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	Acceptance RPD %	Acceptance Limits
62-75-9	MSD N-Methyl-N-nitrosomethylam	116	0.00	U 140	120 *	25-106	22	0-30
110-86-1	MSD Pyridine	116	0.00	U 144	124 *	24-93	17	0-30
62-53-3	MSD Aniline	116	0.00	U 163	140 *	37-113	17	0-30
108-95-2	MSD Phenol	116	0.00	U 121	104 *	23-82	18	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	116	0.00	U 168	145 *	39-114	23	0-30
95-57-8	MSD 2-Chlorophenol	116	0.00	U 169	145 *	37-108	26	0-30
541-73-1	MSD 1,3-Dichlorobenzene	116	0.00	U 118	101 *	27-97	20	0-30
106-46-7	MSD 1,4-Dichlorobenzene	116	0.00	U 121	104 *	28-97	20	0-30
95-50-1	MSD 1,2-Dichlorobenzene	116	0.00	U 127	109 *	28-99	20	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	116	0.00	U 176	152 *	32-127	23	0-30
100-51-6	MSD Benzyl alcohol	116	0.00	U 176	152 *	37-116	22	0-30
95-48-7	MSD o-Cresol	116	0.00	U 167	144 *	34-109	24	0-30
65794-96-9	MSD m,p-Cresols	116	0.00	U 189	162 *	36-120	22	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	116	0.00	U 197	170 *	42-118	22	0-30
67-72-1	MSD Hexachloroethane	116	0.00	U 113	98 *	29-94	17	0-30
98-95-3	MSD Nitrobenzene	116	0.00	U 115	99	38-123	14	0-30
78-59-1	MSD Isophorone	116	0.00	U 120	103	43-120	14	0-30
88-75-5	MSD 2-Nitrophenol	116	0.00	U 111	96	39-115	11	0-30
105-67-9	MSD 2,4-Dimethylphenol	116	0.00	U 98.3	85	39-107	14	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	116	0.00	U 117	101	42-118	14	0-30
120-83-2	MSD 2,4-Dichlorophenol	116	0.00	U 114	98	40-111	14	0-30
65-85-0	MSD Benzoic acid	233	0.00	U 152	65	17-95	27	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-143059MSD

Matrix: W

Lab Sample ID 1203872661

Instrument: MSD4.I

Analysis Date: 09/13/2017 21:19

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	116	0.00 U	135	116	44-138	10	0-30
87-68-3	MSD Hexachlorobutadiene	116	0.00 U	76.1	65	26-98	6	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00 U	137	118	41-122	14	0-30
91-57-6	MSD 2-Methylnaphthalene	116	0.00 U	93.1	80	29-109	3	0-30
91-20-3	MSD Naphthalene	116	0.00 U	92.1	79	31-108	7	0-30
90-12-0	MSD 1-Methylnaphthalene	116	0.00 U	95.7	82	33-112	5	0-30
77-47-4	MSD Hexachlorocyclopentadiene	116	0.00 U	57.0	49	26-79	5	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	116	0.00 U	100	86	39-124	9	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	116	0.00 U	111	95	42-120	11	0-30
91-58-7	MSD 2-Chloronaphthalene	116	0.00 U	82.8	71	29-113	2	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	116	0.00 U	110	94	41-121	13	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	116	0.00 U	134	115	42-144	18	0-30
131-11-3	MSD Dimethylphthalate	116	0.00 U	105	90	45-128	11	0-30
606-20-2	MSD 2,6-Dinitrotoluene	116	0.00 U	109	93	46-124	12	0-30
121-14-2	MSD 2,4-Dinitrotoluene	116	0.00 U	118	102	45-125	12	0-30
208-96-8	MSD Acenaphthylene	116	0.00 U	93.5	80	35-120	5	0-30
83-32-9	MSD Acenaphthene	116	0.00 U	99.2	85	35-117	4	0-30
51-28-5	MSD 2,4-Dinitrophenol	116	0.00 U	125	107	27-122	18	0-30
132-64-9	MSD Dibenzofuran	116	0.00 U	96.6	83	38-113	6	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	116	0.00 U	116	100	40-128	11	0-30
84-66-2	MSD Diethylphthalate	116	0.00 U	111	95	43-127	11	0-30
100-02-7	MSD 4-Nitrophenol	116	0.00 U	80.9	70	17-85	6	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-143059MSD

Matrix: W

Lab Sample ID 1203872661

Instrument: MSD4.I

Analysis Date: 09/13/2017 21:19

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD Fluorene	116	0.00 U	103	89	39-117	7	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	116	0.00 U	101	86	39-121	5	0-30
100-01-6	MSD 4-Nitroaniline <i>p</i> -Nitroaniline	116	0.00 U	122	105	30-133	26	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	116	0.00 U	113	98	32-126	11	0-30
122-39-4	MSD Diphenylamine	116	0.00 U	89.9	77	37-118	6	0-30
122-66-7	MSD Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00 U	89.7	77	38-120	2	0-30
101-55-3	MSD 4-Bromophenylphenylether	116	0.00 U	92.3	79	39-121	2	0-30
118-74-1	MSD Hexachlorobenzene	116	0.00 U	92.6	80	40-118	2	0-30
87-86-5	MSD Pentachlorophenol	116	0.00 U	132	113	35-121	7	0-30
85-01-8	MSD Phenanthrene	116	0.00 U	96.4	83	40-115	4	0-30
120-12-7	MSD Anthracene	116	0.00 U	97.3	84	38-120	5	0-30
84-74-2	MSD Di-n-butylphthalate	116	0.00 U	105	90	41-128	2	0-30
206-44-0	MSD Fluoranthene	116	0.00 U	113	97	41-119	6	0-30
129-00-0	MSD Pyrene	116	0.00 U	96.7	83	35-128	0	0-30
85-68-7	MSD Butylbenzylphthalate	116	0.00 U	98.3	85	40-129	3	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	116	0.00 U	96.4	83	38-131	4	0-30
56-55-3	MSD Benzo(a)anthracene	116	0.00 U	96.8	83	39-120	5	0-30
218-01-9	MSD Chrysene	116	0.00 U	95.9	83	41-124	3	0-30
117-84-0	MSD Di-n-octylphthalate	116	0.00 U	85.7	74	37-134	1	0-30
205-99-2	MSD Benzo(b)fluoranthene	116	0.00 U	99.7	86	31-122	6	0-30
207-08-9	MSD Benzo(k)fluoranthene	116	0.00 U	104	89	33-123	4	0-30
50-32-8	MSD Benzo(a)pyrene	116	0.00 U	93.0	80	32-118	3	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-143059MSD

Matrix: W

Lab Sample ID 1203872661

Instrument: MSD4.I

Analysis Date: 09/13/2017 21:19

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1699758

Inj. Vol: 1 uL

Batch ID: 1699759

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD Indeno(1,2,3-cd)pyrene	116	0.00	U	83.0	71	27-121	1 0-30
53-70-3	MSD Dibenzo(a,h)anthracene	116	0.00	U	84.9	73	30-125	2 0-30
191-24-2	MSD Benzo(ghi)perylene	116	0.00	U	80.0	69	24-126	1 0-30
123-91-1	MSD 1,4-Dioxane	116	0.00	U	147	127 *	24-110	18 0-30
930-55-2	MSD N-Nitrosopyrrolidine	116	0.00	U	184	158 *	47-119	23 0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	116	0.00	U	83.5	72	32-101	2 0-30
1912-24-9	MSD Atrazine	116	0.00	U	103	89	42-129	5 0-30
92-87-5	MSD Benzidine	233	0.00	U	226	97	15-130	28 0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	116	0.00	U	109	94	34-124	9 0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	116	0.00	U	82.1	71	26-102	4 0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701046

Matrix: WASTE WATER

Lab Sample ID 1203876066

Instrument: MSD4.I

Analysis Date: 09/19/2017 18:38

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	35.5	71	30-88
110-86-1	LCS Pyridine	50.0	0.0	36.4	73	27-89
62-53-3	LCS Aniline	50.0	0.0	60.2	120 *	49-112
108-95-2	LCS Phenol	50.0	0.0	26.3	53	16-82
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	65.0	130 *	51-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	61.9	124 *	49-105
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	42.7	85	37-95
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	43.8	88	38-96
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.5	91	39-97
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	62.0	124 *	44-123
100-51-6	LCS Benzyl alcohol	50.0	0.0	52.0	104 *	44-102
95-48-7	LCS o-Cresol	50.0	0.0	53.1	106 *	41-101
65794-96-9	LCS m,p-Cresols	50.0	0.0	56.4	113 *	43-102
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	71.6	143 *	54-115
67-72-1	LCS Hexachloroethane	50.0	0.0	42.1	84	36-96
98-95-3	LCS Nitrobenzene	50.0	0.0	51.4	103	53-115
78-59-1	LCS Isophorone	50.0	0.0	55.7	111	56-117
88-75-5	LCS 2-Nitrophenol	50.0	0.0	51.3	103	51-113
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	45.1	90	51-104
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	53.7	107	55-114
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	52.3	105	53-109
65-85-0	LCS Benzoic acid	100	0.0	37.1	37	21-74

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701046

Matrix: WASTE WATER

Lab Sample ID 1203876066

Instrument: MSD4.I

Analysis Date: 09/19/2017 18:38

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	63.7	127	65-136
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	35.8	72	35-98
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	61.6	123 *	55-115
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	41.5	83	42-103
91-20-3	LCS Naphthalene	50.0	0.0	42.0	84	44-102
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	42.6	85	45-108
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	19.9	40	34-89
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	48.9	98	55-120
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	55.8	112	55-116
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	38.8	78	44-107
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	52.7	105	53-121
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	65.5	131	61-139
131-11-3	LCS Dimethylphthalate	50.0	0.0	52.8	106	60-122
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	55.2	110	59-122
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	60.9	122	57-124
208-96-8	LCS Acenaphthylene	50.0	0.0	44.9	90	50-113
83-32-9	LCS Acenaphthene	50.0	0.0	49.2	98	49-112
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	50.5	101	34-122
132-64-9	LCS Dibenzofuran	50.0	0.0	47.7	95	50-111
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	58.3	117	54-122
84-66-2	LCS Diethylphthalate	50.0	0.0	56.6	113	57-122
100-02-7	LCS 4-Nitrophenol	50.0	0.0	13.6	27	15-137

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701046

Matrix: WASTE WATER

Lab Sample ID 1203876066

Instrument: MSD4.I

Analysis Date: 09/19/2017 18:38

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS Fluorene	50.0	0.0	51.3	103	52-114
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	50.9	102	52-121
100-01-6	LCS 4-Nitroaniline <i>p-Nitroaniline</i>	50.0	0.0	59.0	118	44-137
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	55.1	110	45-124
122-39-4	LCS Diphenylamine	50.0	0.0	45.9	92	55-113
122-66-7	LCS Azobenzene <i>1,2-Diphenylhydrazine</i>	50.0	0.0	45.9	92	53-115
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	47.0	94	54-116
118-74-1	LCS Hexachlorobenzene	50.0	0.0	47.4	95	54-115
87-86-5	LCS Pentachlorophenol	50.0	0.0	60.7	121 *	41-116
85-01-8	LCS Phenanthrene	50.0	0.0	50.2	100	55-110
120-12-7	LCS Anthracene	50.0	0.0	50.3	101	56-112
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	55.9	112	57-123
206-44-0	LCS Fluoranthene	50.0	0.0	59.9	120 *	54-118
129-00-0	LCS Pyrene	50.0	0.0	52.1	104	49-121
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	54.3	109	52-125
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	53.4	107	52-125
56-55-3	LCS Benzo(a)anthracene	50.0	0.0	50.2	100	57-112
218-01-9	LCS Chrysene	50.0	0.0	50.2	100	58-117
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	47.4	95	50-129
205-99-2	LCS Benzo(b)fluoranthene	50.0	0.0	54.2	108	41-118
207-08-9	LCS Benzo(k)fluoranthene	50.0	0.0	55.2	110	42-121
50-32-8	LCS Benzo(a)pyrene	50.0	0.0	50.2	100	40-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701046

Matrix: WASTE WATER

Lab Sample ID 1203876066

Instrument: MSD4.I

Analysis Date: 09/19/2017 18:38

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS Indeno(1,2,3-cd)pyrene	50.0	0.0	45.9	92	34-125
53-70-3	LCS Dibenzo(a,h)anthracene	50.0	0.0	46.3	93	38-129
191-24-2	LCS Benzo(ghi)perylene	50.0	0.0	43.8	88	33-131
123-91-1	LCS 1,4-Dioxane	50.0	0.0	39.4	79 *	38-78
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	63.1	126 *	54-113
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	39.9	80	44-102
1912-24-9	LCS Atrazine	50.0	0.0	56.9	114	60-131
92-87-5	LCS Benzidine	100	0.0	111	111	20-144
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	52.2	104	43-127
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	38.5	77	39-99

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1701046

Matrix: WATER

Lab Sample ID 1203877908

Instrument: MSD4.I

Analysis Date: 09/19/2017 19:05

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62-75-9	LCSD N-Methyl-N-nitrosomethylam	50.0	0.0	35.0	70	30-88	1	0-30
110-86-1	LCSD Pyridine	50.0	0.0	33.7	67	27-89	8	0-30
62-53-3	LCSD Aniline	50.0	0.0	59.5	119 *	49-112	1	0-30
108-95-2	LCSD Phenol	50.0	0.0	25.8	52	16-82	2	0-30
111-44-4	LCSD bis(2-Chloroethyl) ether	50.0	0.0	63.1	126 *	51-111	3	0-30
95-57-8	LCSD 2-Chlorophenol	50.0	0.0	58.9	118 *	49-105	5	0-30
541-73-1	LCSD 1,3-Dichlorobenzene	50.0	0.0	39.9	80	37-95	7	0-30
106-46-7	LCSD 1,4-Dichlorobenzene	50.0	0.0	39.9	80	38-96	9	0-30
95-50-1	LCSD 1,2-Dichlorobenzene	50.0	0.0	42.9	86	39-97	6	0-30
108-60-1	LCSD bis(2-Chloro-1-methylethyl)et	50.0	0.0	60.7	121	44-123	2	0-30
100-51-6	LCSD Benzyl alcohol	50.0	0.0	54.1	108 *	44-102	4	0-30
95-48-7	LCSD o-Cresol	50.0	0.0	52.0	104 *	41-101	2	0-30
65794-96-9	LCSD m,p-Cresols	50.0	0.0	55.8	112 *	43-102	1	0-30
621-64-7	LCSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	70.0	140 *	54-115	2	0-30
67-72-1	LCSD Hexachloroethane	50.0	0.0	39.8	80	36-96	5	0-30
98-95-3	LCSD Nitrobenzene	50.0	0.0	47.1	94	53-115	9	0-30
78-59-1	LCSD Isophorone	50.0	0.0	51.0	102	56-117	9	0-30
88-75-5	LCSD 2-Nitrophenol	50.0	0.0	47.9	96	51-113	7	0-30
105-67-9	LCSD 2,4-Dimethylphenol	50.0	0.0	41.4	83	51-104	8	0-30
111-91-1	LCSD bis(2-Chloroethoxy)methane	50.0	0.0	50.0	100	55-114	7	0-30
120-83-2	LCSD 2,4-Dichlorophenol	50.0	0.0	49.2	98	53-109	6	0-30
65-85-0	LCSD Benzoic acid	100	0.0	38.6	39	21-74	4	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1701046

Matrix: WATER

Lab Sample ID 1203877908

Instrument: MSD4.I

Analysis Date: 09/19/2017 19:05

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	LCSD 4-Chloroaniline	50.0	0.0	58.8	118	65-136	8	0-30
87-68-3	LCSD Hexachlorobutadiene	50.0	0.0	31.0	62	35-98	15	0-30
59-50-7	LCSD Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	57.4	115	55-115	7	0-30
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	37.2	74	42-103	11	0-30
91-20-3	LCSD Naphthalene	50.0	0.0	37.1	74	44-102	12	0-30
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	38.0	76	45-108	12	0-30
77-47-4	LCSD Hexachlorocyclopentadiene	50.0	0.0	18.4	37	34-89	8	0-30
88-06-2	LCSD 2,4,6-Trichlorophenol	50.0	0.0	46.9	94	55-120	4	0-30
95-95-4	LCSD 2,4,5-Trichlorophenol	50.0	0.0	54.1	108	55-116	3	0-30
91-58-7	LCSD 2-Chloronaphthalene	50.0	0.0	37.0	74	44-107	5	0-30
88-74-4	LCSD 2-Nitroaniline o-Nitroaniline	50.0	0.0	50.0	100	53-121	5	0-30
99-09-2	LCSD 3-Nitroaniline m-Nitroaniline	50.0	0.0	61.9	124	61-139	6	0-30
131-11-3	LCSD Dimethylphthalate	50.0	0.0	49.6	99	60-122	6	0-30
606-20-2	LCSD 2,6-Dinitrotoluene	50.0	0.0	51.8	104	59-122	6	0-30
121-14-2	LCSD 2,4-Dinitrotoluene	50.0	0.0	55.7	111	57-124	9	0-30
208-96-8	LCSD Acenaphthylene	50.0	0.0	42.2	84	50-113	6	0-30
83-32-9	LCSD Acenaphthene	50.0	0.0	46.1	92	49-112	6	0-30
51-28-5	LCSD 2,4-Dinitrophenol	50.0	0.0	50.8	102	34-122	1	0-30
132-64-9	LCSD Dibenzofuran	50.0	0.0	44.8	90	50-111	6	0-30
58-90-2	LCSD 2,3,4,6-Tetrachlorophenol	50.0	0.0	54.8	110	54-122	6	0-30
84-66-2	LCSD Diethylphthalate	50.0	0.0	52.2	104	57-122	8	0-30
100-02-7	LCSD 4-Nitrophenol	50.0	0.0	13.2	26	15-137	3	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1701046

Matrix: WATER

Lab Sample ID 1203877908

Instrument: MSD4.I

Analysis Date: 09/19/2017 19:05

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	LCSD Fluorene	50.0	0.0	47.9	96	52-114	7	0-30
7005-72-3	LCSD 4-Chlorophenylphenylether	50.0	0.0	47.8	96	52-121	6	0-30
100-01-6	LCSD 4-Nitroaniline <i>p</i> -Nitroaniline	50.0	0.0	52.7	105	44-137	11	0-30
534-52-1	LCSD 2-Methyl-4,6-dinitrophenol	50.0	0.0	53.4	107	45-124	3	0-30
122-39-4	LCSD Diphenylamine	50.0	0.0	44.3	89	55-113	3	0-30
122-66-7	LCSD Azobenzene <i>1,2</i> -Diphenylhydrazine	50.0	0.0	44.5	89	53-115	3	0-30
101-55-3	LCSD 4-Bromophenylphenylether	50.0	0.0	45.3	91	54-116	4	0-30
118-74-1	LCSD Hexachlorobenzene	50.0	0.0	44.3	89	54-115	7	0-30
87-86-5	LCSD Pentachlorophenol	50.0	0.0	59.0	118 *	41-116	3	0-30
85-01-8	LCSD Phenanthrene	50.0	0.0	46.6	93	55-110	8	0-30
120-12-7	LCSD Anthracene	50.0	0.0	46.2	92	56-112	8	0-30
84-74-2	LCSD Di-n-butylphthalate	50.0	0.0	51.4	103	57-123	8	0-30
206-44-0	LCSD Fluoranthene	50.0	0.0	52.7	105	54-118	13	0-30
129-00-0	LCSD Pyrene	50.0	0.0	52.3	105	49-121	0	0-30
85-68-7	LCSD Butylbenzylphthalate	50.0	0.0	52.2	104	52-125	4	0-30
117-81-7	LCSD bis(2-Ethylhexyl)phthalate	50.0	0.0	49.9	100	52-125	7	0-30
56-55-3	LCSD Benzo(a)anthracene	50.0	0.0	46.8	94	57-112	7	0-30
218-01-9	LCSD Chrysene	50.0	0.0	46.6	93	58-117	7	0-30
117-84-0	LCSD Di-n-octylphthalate	50.0	0.0	42.8	86	50-129	10	0-30
205-99-2	LCSD Benzo(b)fluoranthene	50.0	0.0	49.3	99	41-118	10	0-30
207-08-9	LCSD Benzo(k)fluoranthene	50.0	0.0	51.7	103	42-121	7	0-30
50-32-8	LCSD Benzo(a)pyrene	50.0	0.0	45.1	90	40-118	11	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1701046

Matrix: WATER

Lab Sample ID 1203877908

Instrument: MSD4.I

Analysis Date: 09/19/2017 19:05

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	50.0	0.0	38.4	77	34-125	18	0-30
53-70-3	LCSD Dibenzo(a,h)anthracene	50.0	0.0	39.0	78	38-129	17	0-30
191-24-2	LCSD Benzo(ghi)perylene	50.0	0.0	37.1	74	33-131	17	0-30
123-91-1	LCSD 1,4-Dioxane	50.0	0.0	38.7	77	38-78	2	0-30
930-55-2	LCSD N-Nitrosopyrrolidine	50.0	0.0	62.3	125 *	54-113	1	0-30
95-94-3	LCSD 1,2,4,5-Tetrachlorobenzene	50.0	0.0	36.9	74	44-102	8	0-30
1912-24-9	LCSD Atrazine	50.0	0.0	52.9	106	60-131	7	0-30
92-87-5	LCSD Benzidine	100	0.0	71.6	72	20-144	43 *	0-30
91-94-1	LCSD 3,3'-Dichlorobenzidine	50.0	0.0	46.9	94	43-127	11	0-30
120-82-1	LCSD 1,2,4-Trichlorobenzene	50.0	0.0	33.1	66	39-99	15	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-142918MS

Matrix: W

Lab Sample ID 1203876072

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:29

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	116	0.00 U	84.5	73	25-106
110-86-1	MS Pyridine	116	0.00 U	82.4	71	24-93
62-53-3	MS Aniline	116	0.00 U	105	90	37-113
108-95-2	MS Phenol	116	0.00 U	77.1	66	23-82
111-44-4	MS bis(2-Chloroethyl) ether	116	0.00 U	106	91	39-114
95-57-8	MS 2-Chlorophenol	116	0.00 U	103	89	37-108
541-73-1	MS 1,3-Dichlorobenzene	116	0.00 U	75.9	65	27-97
106-46-7	MS 1,4-Dichlorobenzene	116	0.00 U	77.8	67	28-97
95-50-1	MS 1,2-Dichlorobenzene	116	0.00 U	82.5	71	28-99
108-60-1	MS bis(2-Chloro-1-methylethyl)et	116	0.00 U	110	95	32-127
100-51-6	MS Benzyl alcohol	116	0.00 U	105	90	37-116
95-48-7	MS o-Cresol	116	0.00 U	103	88	34-109
65794-96-9	MS m,p-Cresols	116	0.00 U	120	103	36-120
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	116	0.00 U	127	109	42-118
67-72-1	MS Hexachloroethane	116	0.00 U	75.9	65	29-94
98-95-3	MS Nitrobenzene	116	0.00 U	103	89	38-123
78-59-1	MS Isophorone	116	0.00 U	111	96	43-120
88-75-5	MS 2-Nitrophenol	116	0.00 U	102	88	39-115
105-67-9	MS 2,4-Dimethylphenol	116	0.00 U	90.0	77	39-107
111-91-1	MS bis(2-Chloroethoxy)methane	116	0.00 U	106	91	42-118
120-83-2	MS 2,4-Dichlorophenol	116	0.00 U	105	90	40-111
65-85-0	MS Benzoic acid	233	0.00 U	142	61	17-95

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-142918MS

Matrix: W

Lab Sample ID 1203876072

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:29

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	116	0.00	U	124	107	44-138
87-68-3	MS	Hexachlorobutadiene	116	0.00	U	71.0	61	26-98
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00	U	129	111	41-122
91-57-6	MS	2-Methylnaphthalene	116	0.00	U	85.7	74	29-109
91-20-3	MS	Naphthalene	116	0.00	U	85.0	73	31-108
90-12-0	MS	1-Methylnaphthalene	116	0.00	U	88.2	76	33-112
77-47-4	MS	Hexachlorocyclopentadiene	116	0.00	U	47.6	41	26-79
88-06-2	MS	2,4,6-Trichlorophenol	116	0.00	U	106	91	39-124
95-95-4	MS	2,4,5-Trichlorophenol	116	0.00	U	122	105	42-120
91-58-7	MS	2-Chloronaphthalene	116	0.00	U	87.0	75	29-113
88-74-4	MS	2-Nitroaniline o-Nitroaniline	116	0.00	U	115	99	41-121
99-09-2	MS	3-Nitroaniline m-Nitroaniline	116	0.00	U	146	126	42-144
131-11-3	MS	Dimethylphthalate	116	0.00	U	112	97	45-128
606-20-2	MS	2,6-Dinitrotoluene	116	0.00	U	117	101	46-124
121-14-2	MS	2,4-Dinitrotoluene	116	0.00	U	131	113	45-125
208-96-8	MS	Acenaphthylene	116	0.00	U	97.9	84	35-120
83-32-9	MS	Acenaphthene	116	0.00	U	107	92	35-117
51-28-5	MS	2,4-Dinitrophenol	116	0.00	U	128	110	27-122
132-64-9	MS	Dibenzofuran	116	0.00	U	102	88	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	116	0.00	U	129	111	40-128
84-66-2	MS	Diethylphthalate	116	0.00	U	120	103	43-127
100-02-7	MS	4-Nitrophenol	116	0.00	U	82.6	71	17-85

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-142918MS

Matrix: W

Lab Sample ID 1203876072

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:29

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	116	0.00	U	111	96	39-117
7005-72-3	MS	4-Chlorophenylphenylether	116	0.00	U	110	95	39-121
100-01-6	MS	4-Nitroaniline <i>p</i> -Nitroaniline	116	0.00	U	134	116	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	116	0.00	U	127	109	32-126
122-39-4	MS	Diphenylamine	116	0.00	U	95.9	82	37-118
122-66-7	MS	Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00	U	96.2	83	38-120
101-55-3	MS	4-Bromophenylphenylether	116	0.00	U	100	86	39-121
118-74-1	MS	Hexachlorobenzene	116	0.00	U	98.3	85	40-118
87-86-5	MS	Pentachlorophenol	116	0.00	U	144	124 *	35-121
85-01-8	MS	Phenanthrene	116	0.00	U	106	91	40-115
120-12-7	MS	Anthracene	116	0.00	U	106	92	38-120
84-74-2	MS	Di-n-butylphthalate	116	0.00	U	116	100	41-128
206-44-0	MS	Fluoranthene	116	0.00	U	129	111	41-119
129-00-0	MS	Pyrene	116	0.00	U	101	87	35-128
85-68-7	MS	Butylbenzylphthalate	116	0.00	U	107	92	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	116	0.00	U	101	87	38-131
56-55-3	MS	Benzo(a)anthracene	116	0.00	U	106	91	39-120
218-01-9	MS	Chrysene	116	0.00	U	104	89	41-124
117-84-0	MS	Di-n-octylphthalate	116	0.430	U	93.7	80	37-134
205-99-2	MS	Benzo(b)fluoranthene	116	0.00	U	113	97	31-122
207-08-9	MS	Benzo(k)fluoranthene	116	0.00	U	115	99	33-123
50-32-8	MS	Benzo(a)pyrene	116	0.00	U	101	87	32-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-142918MS

Matrix: W

Lab Sample ID 1203876072

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:29

Dilution: 1

Analyst: JMB3

Prep Batch ID:1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS Indeno(1,2,3-cd)pyrene	116	0.00 U	83.6	72	27-121
53-70-3	MS Dibenzo(a,h)anthracene	116	0.00 U	84.7	73	30-125
191-24-2	MS Benzo(ghi)perylene	116	0.00 U	79.6	68	24-126
123-91-1	MS 1,4-Dioxane	116	0.00 U	90.8	78	24-110
930-55-2	MS N-Nitrosopyrrolidine	116	0.00 U	120	103	47-119
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	116	0.00 U	87.7	75	32-101
1912-24-9	MS Atrazine	116	0.00 U	119	103	42-129
92-87-5	MS Benzidine	233	0.00 U	238	102	15-130
91-94-1	MS 3,3'-Dichlorobenzidine	116	0.00 U	119	102	34-124
120-82-1	MS 1,2,4-Trichlorobenzene	116	0.00 U	75.3	65	26-102

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-142918MSD

Matrix: W

Lab Sample ID 1203876073

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:57

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits	
62-75-9	MSD N-Methyl-N-nitrosomethylam	116	0.00	U	81.7	70	25-106	3	0-30
110-86-1	MSD Pyridine	116	0.00	U	62.2	53	24-93	28	0-30
62-53-3	MSD Aniline	116	0.00	U	102	88	37-113	3	0-30
108-95-2	MSD Phenol	116	0.00	U	77.3	67	23-82	0	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	116	0.00	U	106	91	39-114	0	0-30
95-57-8	MSD 2-Chlorophenol	116	0.00	U	104	90	37-108	1	0-30
541-73-1	MSD 1,3-Dichlorobenzene	116	0.00	U	72.8	63	27-97	4	0-30
106-46-7	MSD 1,4-Dichlorobenzene	116	0.00	U	74.9	64	28-97	4	0-30
95-50-1	MSD 1,2-Dichlorobenzene	116	0.00	U	78.8	68	28-99	5	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	116	0.00	U	106	91	32-127	4	0-30
100-51-6	MSD Benzyl alcohol	116	0.00	U	105	90	37-116	0	0-30
95-48-7	MSD o-Cresol	116	0.00	U	102	88	34-109	1	0-30
65794-96-9	MSD m,p-Cresols	116	0.00	U	120	103	36-120	0	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	116	0.00	U	124	107	42-118	2	0-30
67-72-1	MSD Hexachloroethane	116	0.00	U	72.1	62	29-94	5	0-30
98-95-3	MSD Nitrobenzene	116	0.00	U	99.5	86	38-123	4	0-30
78-59-1	MSD Isophorone	116	0.00	U	107	92	43-120	4	0-30
88-75-5	MSD 2-Nitrophenol	116	0.00	U	100	86	39-115	2	0-30
105-67-9	MSD 2,4-Dimethylphenol	116	0.00	U	88.4	76	39-107	2	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	116	0.00	U	103	88	42-118	3	0-30
120-83-2	MSD 2,4-Dichlorophenol	116	0.00	U	101	87	40-111	3	0-30
65-85-0	MSD Benzoic acid	233	0.00	U	150	64	17-95	5	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-142918MSD

Matrix: W

Lab Sample ID 1203876073

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:57

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	116	0.00 U	125	107	44-138	0	0-30
87-68-3	MSD Hexachlorobutadiene	116	0.00 U	66.0	57	26-98	7	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00 U	128	110	41-122	1	0-30
91-57-6	MSD 2-Methylnaphthalene	116	0.00 U	81.5	70	29-109	5	0-30
91-20-3	MSD Naphthalene	116	0.00 U	80.1	69	31-108	6	0-30
90-12-0	MSD 1-Methylnaphthalene	116	0.00 U	85.2	73	33-112	3	0-30
77-47-4	MSD Hexachlorocyclopentadiene	116	0.00 U	42.5	37	26-79	11	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	116	0.00 U	99.2	85	39-124	7	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	116	0.00 U	115	99	42-120	5	0-30
91-58-7	MSD 2-Chloronaphthalene	116	0.00 U	79.3	68	29-113	9	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	116	0.00 U	109	94	41-121	5	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	116	0.00 U	142	122	42-144	3	0-30
131-11-3	MSD Dimethylphthalate	116	0.00 U	107	92	45-128	5	0-30
606-20-2	MSD 2,6-Dinitrotoluene	116	0.00 U	112	97	46-124	4	0-30
121-14-2	MSD 2,4-Dinitrotoluene	116	0.00 U	126	108	45-125	4	0-30
208-96-8	MSD Acenaphthylene	116	0.00 U	91.6	79	35-120	7	0-30
83-32-9	MSD Acenaphthene	116	0.00 U	98.6	85	35-117	8	0-30
51-28-5	MSD 2,4-Dinitrophenol	116	0.00 U	132	113	27-122	3	0-30
132-64-9	MSD Dibenzofuran	116	0.00 U	96.6	83	38-113	6	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	116	0.00 U	122	105	40-128	6	0-30
84-66-2	MSD Diethylphthalate	116	0.00 U	113	97	43-127	6	0-30
100-02-7	MSD 4-Nitrophenol	116	0.00 U	99.6	86 *	17-85	19	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-142918MSD

Matrix: W

Lab Sample ID 1203876073

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:57

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD Fluorene	116	0.00 U	105	90	39-117	6	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	116	0.00 U	105	90	39-121	5	0-30
100-01-6	MSD 4-Nitroaniline <i>p</i> -Nitroaniline	116	0.00 U	141	121	30-133	5	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	116	0.00 U	122	105	32-126	4	0-30
122-39-4	MSD Diphenylamine	116	0.00 U	89.0	77	37-118	8	0-30
122-66-7	MSD Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00 U	89.4	77	38-120	7	0-30
101-55-3	MSD 4-Bromophenylphenylether	116	0.00 U	91.8	79	39-121	9	0-30
118-74-1	MSD Hexachlorobenzene	116	0.00 U	90.3	78	40-118	9	0-30
87-86-5	MSD Pentachlorophenol	116	0.00 U	132	114	35-121	9	0-30
85-01-8	MSD Phenanthrene	116	0.00 U	97.7	84	40-115	8	0-30
120-12-7	MSD Anthracene	116	0.00 U	97.8	84	38-120	8	0-30
84-74-2	MSD Di-n-butylphthalate	116	0.00 U	105	90	41-128	10	0-30
206-44-0	MSD Fluoranthene	116	0.00 U	119	102	41-119	9	0-30
129-00-0	MSD Pyrene	116	0.00 U	101	87	35-128	0	0-30
85-68-7	MSD Butylbenzylphthalate	116	0.00 U	96.9	83	40-129	10	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	116	0.00 U	80.3	69	38-131	22	0-30
56-55-3	MSD Benzo(a)anthracene	116	0.00 U	98.8	85	39-120	7	0-30
218-01-9	MSD Chrysene	116	0.00 U	98.8	85	41-124	5	0-30
117-84-0	MSD Di-n-octylphthalate	116	0.430 U	71.8	61	37-134	26	0-30
205-99-2	MSD Benzo(b)fluoranthene	116	0.00 U	105	90	31-122	8	0-30
207-08-9	MSD Benzo(k)fluoranthene	116	0.00 U	108	93	33-123	6	0-30
50-32-8	MSD Benzo(a)pyrene	116	0.00 U	95.0	82	32-118	7	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-142918MSD

Matrix: W

Lab Sample ID 1203876073

Instrument: MSD4.I

Analysis Date: 09/19/2017 20:57

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1701046

Inj. Vol: 1 uL

Batch ID: 1701047

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD Indeno(1,2,3-cd)pyrene	116	0.00	U	86.5	74	27-121	3	0-30
53-70-3	MSD Dibenzo(a,h)anthracene	116	0.00	U	84.7	73	30-125	0	0-30
191-24-2	MSD Benzo(ghi)perylene	116	0.00	U	84.1	72	24-126	5	0-30
123-91-1	MSD 1,4-Dioxane	116	0.00	U	86.0	74	24-110	5	0-30
930-55-2	MSD N-Nitrosopyrrolidine	116	0.00	U	119	103	47-119	1	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	116	0.00	U	78.6	68	32-101	11	0-30
1912-24-9	MSD Atrazine	116	0.00	U	109	94	42-129	9	0-30
92-87-5	MSD Benzidine	233	0.00	U	178	77	15-130	29	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	116	0.00	U	109	94	34-124	9	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	116	0.00	U	69.7	60	26-102	8	0-30

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1699758	Instrument ID:	MSD4.I	Data File:	s091317.B\s4i1307.D
Lab Sample ID:	1203872658	Prep Date:	09/13/2017 12:00	Analyzed:	09/13/17 19:28
Column:	DB-5ms				

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 1699758	1203872659	s091317.B\s4i1308.D	09/13/17	1955
02 CAWA-17-143059	432512008	s091317.B\s4i1309.D	09/13/17	2023
03 CAWA-17-143059MS	1203872660	s091317.B\s4i1310.D	09/13/17	2051
04 CAWA-17-143059MSD	1203872661	s091317.B\s4i1311.D	09/13/17	2119
05 CAWA-17-143061	432512011	s091317.B\s4i1312.D	09/13/17	2146

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WASTE WATER
Client ID:	MB for batch 1701046	Instrument ID:	MSD4.I	Data File:	s091917.B\s4i1908.D
Lab Sample ID:	1203876065	Prep Date:	09/19/2017 10:10	Analyzed:	09/19/17 18:10
Column:	DB-5ms				

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 1701046	1203876066	s091917.B\s4i1909.D	09/19/17	1838
02 LCSD for batch 1701046	1203877908	s091917.B\s4i1910.D	09/19/17	1905
03 CAWA-17-143061RE	432512011	s091917.B\s4i1911.D	09/19/17	1933
04 CAWA-17-142918MS	1203876072	s091917.B\s4i1913.D	09/19/17	2029
05 CAWA-17-142918MSD	1203876073	s091917.B\s4i1914.D	09/19/17	2057

Quality Control Data

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708	Matrix: WATER
Lab Sample ID: 1203872658	
Client Sample: QC for batch 1699758	Client: ARSL004
Client ID: MB for batch 1699758	Method: SW846 3510C/8270D
Batch ID: 1699759	Inst: MSD4.I
Run Date: 09/13/2017 19:28	Analyst: JMB3
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL
Data File: s091317.B\s4i1307.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	3.00	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	3.00	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
122-66-7	Azobenzene	U	3.00	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	3.00	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	3.00	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	3.00	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	3.00	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	3.00	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	3.00	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	5.00	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	0.410	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	3.00	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	3.00	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	3.00	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	3.00	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	3.00	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	3.00	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	3.30	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	3.00	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	3.00	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	0.300	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	0.300	ug/L	0.300	1.00
62-53-3	Aniline	U	4.20	ug/L	4.20	10.0
120-12-7	Anthracene	U	0.300	ug/L	0.300	1.00
1912-24-9	Atrazine	U	3.00	ug/L	3.00	10.0
92-87-5	Benzidine	U	3.90	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	0.300	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	0.300	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	J	0.310	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	0.300	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203872658

Client Sample: QC for batch 1699758

Client ID: MB for batch 1699758

Batch ID: 1699759

Run Date: 09/13/2017 19:28

Prep Date: 09/13/2017 12:00

Data File: s091317.B\4i1307.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.300	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	6.00	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	3.00	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	3.00	ug/L	3.00	10.0
218-01-9	Chrysene	U	0.300	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	3.00	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	3.00	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	0.300	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	3.00	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	3.00	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	3.00	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	3.00	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	0.300	ug/L	0.300	1.00
86-73-7	Fluorene	U	0.300	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	3.00	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	3.00	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	3.00	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	3.00	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.300	ug/L	0.300	1.00
78-59-1	Isophorone	U	3.50	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	3.00	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	3.00	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	3.00	ug/L	3.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	3.00	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	3.00	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	0.300	ug/L	0.300	1.00
108-95-2	Phenol	U	3.00	ug/L	3.00	10.0
129-00-0	Pyrene	U	0.300	ug/L	0.300	1.00
110-86-1	Pyridine	U	3.00	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	3.00	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	3.00	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	3.00	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	3.00	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Matrix: WATER
Lab Sample ID: 1203872658	
Client Sample: QC for batch 1699758	Client: ARSL004
Client ID: MB for batch 1699758	Method: SW846 3510C/8270D
Batch ID: 1699759	Inst: MSD4.I
Run Date: 09/13/2017 19:28	Analyst: JMB3
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL
Data File: s091317.B\s4i1307.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	3.70	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	3.00	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	90.7	100	ug/L	91 (32%-124%)
2-Fluorobiphenyl	27.2	50.0	ug/L	54 (32%-112%)
2-Fluorophenol	50.9	100	ug/L	51 (15%-88%)
Nitrobenzene-d5	37.8	50.0	ug/L	76 (36%-115%)
Phenol-d5	31.9	100	ug/L	32 (15%-91%)
p-Terphenyl-d14	47.5	50.0	ug/L	95 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	1.826	6.47	ug/L	0	J
1000154-28-6	Cyclopentene, 1,2,3,4,5-pentamethy	4.169	7.67	ug/L	90	NJ

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203872659

Client Sample: QC for batch 1699758

Client ID: LCS for batch 1699758

Batch ID: 1699759

Run Date: 09/13/2017 19:55

Prep Date: 09/13/2017 12:00

Data File: s091317.B\s4i1308.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		33.7	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		30.2	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		31.8	ug/L	3.00	10.0
122-66-7	Azobenzene		41.4	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		29.1	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		30.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		27.9	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		34.7	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		52.1	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		48.5	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		44.2	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		43.5	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		37.8	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		52.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		53.9	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		48.8	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		33.7	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		42.3	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		50.1	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		34.4	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		42.6	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		49.2	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		42.4	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		52.9	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		53.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		44.9	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		15.0	ug/L	3.00	10.0
83-32-9	Acenaphthene		42.1	ug/L	0.300	1.00
208-96-8	Acenaphthylene		39.4	ug/L	0.300	1.00
62-53-3	Aniline		43.9	ug/L	4.20	10.0
120-12-7	Anthracene		44.5	ug/L	0.300	1.00
1912-24-9	Atrazine		48.5	ug/L	3.00	10.0
92-87-5	Benzidine		81.4	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		45.5	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		43.6	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	B	46.9	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		41.4	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708		Matrix:	WATER
Lab Sample ID: 1203872659			
Client Sample: QC for batch 1699758	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1699758	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution:	1
Run Date: 09/13/2017 19:55	Analyst: JMB3	Inj. Vol:	1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: s091317.B\4i1308.D	Column: DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		47.1	ug/L	0.300	1.00
65-85-0	Benzoic acid		34.2	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		41.1	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		47.7	ug/L	3.00	10.0
218-01-9	Chrysene		45.3	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		47.9	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		40.7	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		42.2	ug/L	0.300	1.00
132-64-9	Dibenzofuran		41.4	ug/L	3.00	10.0
84-66-2	Diethylphthalate		49.9	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		47.2	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine		41.3	ug/L	3.00	10.0
206-44-0	Fluoranthene		51.9	ug/L	0.300	1.00
86-73-7	Fluorene		45.1	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		41.8	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		27.9	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		21.8	ug/L	3.00	10.0
67-72-1	Hexachloroethane		28.4	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		42.2	ug/L	0.300	1.00
78-59-1	Isophorone		46.5	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		25.4	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		52.4	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		46.2	ug/L	3.00	10.0
91-20-3	Naphthalene		34.6	ug/L	0.300	1.00
98-95-3	Nitrobenzene		43.2	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		58.1	ug/L	3.00	10.0
85-01-8	Phenanthrene		44.7	ug/L	0.300	1.00
108-95-2	Phenol		19.2	ug/L	3.00	10.0
129-00-0	Pyrene		48.0	ug/L	0.300	1.00
110-86-1	Pyridine		27.3	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		45.8	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		44.9	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		45.2	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		48.0	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Matrix: WATER
Lab Sample ID: 1203872659	
Client Sample: QC for batch 1699758	Client: ARSL004
Client ID: LCS for batch 1699758	Method: SW846 3510C/8270D
Batch ID: 1699759	Inst: MSD4.I
Run Date: 09/13/2017 19:55	Analyst: JMB3
Prep Date: 09/13/2017 12:00	Aliquot: 1000 mL
Data File: s091317.B\s4i1308.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		41.8	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		59.5	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		38.4	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		48.9	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		52.4	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	111	100	ug/L	111	(32%-124%)
2-Fluorobiphenyl	34.3	50.0	ug/L	69	(32%-112%)
2-Fluorophenol	52.5	100	ug/L	52	(15%-88%)
Nitrobenzene-d5	38.2	50.0	ug/L	76	(36%-115%)
Phenol-d5	33.9	100	ug/L	34	(15%-91%)
p-Terphenyl-d14	51.5	50.0	ug/L	103	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872660	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:51	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1310.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		85.5	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		78.7	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		104	ug/L	6.98	23.3
122-66-7	Azobenzene		88.0	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		96.4	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		98.3	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		123	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		90.9	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		104	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		99.3	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		91.5	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		99.6	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		85.9	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		104	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		105	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		96.6	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		81.3	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		131	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		101	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		90.1	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		99.2	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		99.4	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		90.2	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		120	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		122	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		95.8	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		76.3	ug/L	6.98	23.3
83-32-9	Acenaphthene		95.5	ug/L	0.698	2.33
208-96-8	Acenaphthylene		88.5	ug/L	0.698	2.33
62-53-3	Aniline		137	ug/L	9.77	23.3
120-12-7	Anthracene		92.1	ug/L	0.698	2.33
1912-24-9	Atrazine		98.4	ug/L	6.98	23.3
92-87-5	Benzidine		171	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		92.5	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		90.3	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene	B	94.2	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		79.3	ug/L	0.698	2.33

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872660	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:51	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\411310.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		99.2	ug/L	0.698	2.33
65-85-0	Benzoic acid		116	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		141	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		95.3	ug/L	6.98	23.3
218-01-9	Chrysene		93.5	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		103	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		85.1	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		82.8	ug/L	0.698	2.33
132-64-9	Dibenzofuran		91.0	ug/L	6.98	23.3
84-66-2	Diethylphthalate		99.6	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		94.4	ug/L	6.98	23.3
88-85-7	Dinoseb	U	6.98	ug/L	6.98	23.3
122-39-4	Diphenylamine		84.7	ug/L	6.98	23.3
206-44-0	Fluoranthene		106	ug/L	0.698	2.33
86-73-7	Fluorene		96.2	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		90.7	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		71.5	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		60.2	ug/L	6.98	23.3
67-72-1	Hexachloroethane		95.9	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		81.9	ug/L	0.698	2.33
78-59-1	Isophorone		105	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		112	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	6.98	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	6.98	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine		158	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		147	ug/L	6.98	23.3
91-20-3	Naphthalene		86.1	ug/L	0.698	2.33
98-95-3	Nitrobenzene		101	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	6.98	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		123	ug/L	6.98	23.3
85-01-8	Phenanthrene		93.0	ug/L	0.698	2.33
108-95-2	Phenol		101	ug/L	6.98	23.3
129-00-0	Pyrene		96.8	ug/L	0.698	2.33
110-86-1	Pyridine		122	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		141	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		102	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		134	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		93.0	ug/L	6.98	23.3

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872660	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 20:51	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1310.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		151	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		112	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		131	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		95.8	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		93.7	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	215	233	ug/L	92	(32%-124%)
2-Fluorobiphenyl	73.7	116	ug/L	63	(32%-112%)
2-Fluorophenol	226	233	ug/L	97	(15%-88%)
Nitrobenzene-d5	88.6	116	ug/L	76	(36%-115%)
Phenol-d5	181	233	ug/L	78	(15%-91%)
p-Terphenyl-d14	103	116	ug/L	89	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872661	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:19	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1311.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		83.5	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		82.1	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		127	ug/L	6.98	23.3
122-66-7	Azobenzene		89.7	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		118	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		121	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		147	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		95.7	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		116	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		111	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		100	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		114	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		98.3	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		125	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		118	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		109	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		82.8	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		169	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		113	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		93.1	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		111	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		109	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		92.3	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		137	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		135	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		101	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		80.9	ug/L	6.98	23.3
83-32-9	Acenaphthene		99.2	ug/L	0.698	2.33
208-96-8	Acenaphthylene		93.5	ug/L	0.698	2.33
62-53-3	Aniline		163	ug/L	9.77	23.3
120-12-7	Anthracene		97.3	ug/L	0.698	2.33
1912-24-9	Atrazine		103	ug/L	6.98	23.3
92-87-5	Benzidine		226	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		96.8	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		93.0	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene	B	99.7	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		80.0	ug/L	0.698	2.33

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872661	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:19	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\41311.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		104	ug/L	0.698	2.33
65-85-0	Benzoic acid		152	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		176	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		98.3	ug/L	6.98	23.3
218-01-9	Chrysene		95.9	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		105	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		85.7	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		84.9	ug/L	0.698	2.33
132-64-9	Dibenzofuran		96.6	ug/L	6.98	23.3
84-66-2	Diethylphthalate		111	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		105	ug/L	6.98	23.3
88-85-7	Dinoseb	U	6.98	ug/L	6.98	23.3
122-39-4	Diphenylamine		89.9	ug/L	6.98	23.3
206-44-0	Fluoranthene		113	ug/L	0.698	2.33
86-73-7	Fluorene		103	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		92.6	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		76.1	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		57.0	ug/L	6.98	23.3
67-72-1	Hexachloroethane		113	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		83.0	ug/L	0.698	2.33
78-59-1	Isophorone		120	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		140	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	6.98	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	6.98	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine	E	197	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		184	ug/L	6.98	23.3
91-20-3	Naphthalene		92.1	ug/L	0.698	2.33
98-95-3	Nitrobenzene		115	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	6.98	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		132	ug/L	6.98	23.3
85-01-8	Phenanthrene		96.4	ug/L	0.698	2.33
108-95-2	Phenol		121	ug/L	6.98	23.3
129-00-0	Pyrene		96.7	ug/L	0.698	2.33
110-86-1	Pyridine		144	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		176	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		117	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		168	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		96.4	ug/L	6.98	23.3

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203872661	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1699758	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1699759	Inst: MSD4.I	Dilution: 1
Run Date: 09/13/2017 21:19	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/13/2017 12:00	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091317.B\s4i1311.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		189	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		134	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		167	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		110	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		122	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	250	233	ug/L	107	(32%-124%)
2-Fluorobiphenyl	81.0	116	ug/L	70	(32%-112%)
2-Fluorophenol	283	233	ug/L	122	* (15%-88%)
Nitrobenzene-d5	102	116	ug/L	88	(36%-115%)
Phenol-d5	217	233	ug/L	93	* (15%-91%)
p-Terphenyl-d14	106	116	ug/L	91	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203876065

Client Sample: QC for batch 1701046

Client ID: MB for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 18:10

Prep Date: 09/19/2017 10:10

Data File: s091917.B\s4i1908.D

Matrix: WASTE WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD4.I
Analyst: JMB3
Aliquot: 1000 mL
Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	3.00	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	3.00	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
122-66-7	Azobenzene	U	3.00	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	3.00	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	3.00	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	3.00	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	3.00	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	3.00	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	3.00	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	3.00	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	5.00	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	3.00	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	0.410	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	3.00	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	3.00	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	0.300	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	3.00	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	3.00	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	3.00	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	3.00	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	3.30	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	3.00	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	3.00	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	0.300	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	0.300	ug/L	0.300	1.00
62-53-3	Aniline	U	4.20	ug/L	4.20	10.0
120-12-7	Anthracene	U	0.300	ug/L	0.300	1.00
1912-24-9	Atrazine	U	3.00	ug/L	3.00	10.0
92-87-5	Benzidine	U	3.90	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	0.300	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	0.300	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	U	0.300	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	0.300	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203876065

Client Sample: QC for batch 1701046

Client ID: MB for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 18:10

Prep Date: 09/19/2017 10:10

Data File: s091917.B\41908.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WASTE WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.300	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	6.00	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	3.00	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	3.00	ug/L	3.00	10.0
218-01-9	Chrysene	U	0.300	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	3.00	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	3.00	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	0.300	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	3.00	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	3.00	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	3.00	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	3.00	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	0.300	ug/L	0.300	1.00
86-73-7	Fluorene	U	0.300	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	3.00	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	3.00	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	3.00	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	3.00	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.300	ug/L	0.300	1.00
78-59-1	Isophorone	U	3.50	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	3.00	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	3.00	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	3.00	ug/L	3.00	10.0
91-20-3	Naphthalene	U	0.300	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	3.00	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	3.00	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	0.300	ug/L	0.300	1.00
108-95-2	Phenol	U	3.00	ug/L	3.00	10.0
129-00-0	Pyrene	U	0.300	ug/L	0.300	1.00
110-86-1	Pyridine	U	3.00	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	3.00	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	3.00	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	3.00	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	3.00	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Matrix: WASTE WATER
Lab Sample ID: 1203876065	
Client Sample: QC for batch 1701046	Client: ARSL004
Client ID: MB for batch 1701046	Method: SW846 3510C/8270D
Batch ID: 1701047	Inst: MSD4.I
Run Date: 09/19/2017 18:10	Analyst: JMB3
Prep Date: 09/19/2017 10:10	Aliquot: 1000 mL
Data File: s091917.B\s4i1908.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	3.70	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	3.00	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	3.00	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	114	100	ug/L	114	(32%-124%)
2-Fluorobiphenyl	28.6	50.0	ug/L	57	(32%-112%)
2-Fluorophenol	63.3	100	ug/L	63	(15%-88%)
Nitrobenzene-d5	47.8	50.0	ug/L	96	(36%-115%)
Phenol-d5	39.4	100	ug/L	39	(15%-91%)
p-Terphenyl-d14	57.7	50.0	ug/L	115	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	1.789	7.53	ug/L	0	J
1000154-28-6	Cyclopentene, 1,2,3,4,5-pentamethy	4.131	4.12	ug/L	90	NJ

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203876066

Client Sample: QC for batch 1701046

Client ID: LCS for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 18:38

Prep Date: 09/19/2017 10:10

Data File: s091917.B\s4i1909.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WASTE WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		39.9	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		38.5	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		45.5	ug/L	3.00	10.0
122-66-7	Azobenzene		45.9	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		42.7	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		43.8	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		39.4	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		42.6	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		58.3	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		55.8	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		48.9	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		52.3	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		45.1	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		50.5	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		60.9	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		55.2	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		38.8	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		61.9	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		55.1	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		41.5	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		51.3	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		52.2	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		47.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		61.6	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		63.7	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		50.9	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		13.6	ug/L	3.00	10.0
83-32-9	Acenaphthene		49.2	ug/L	0.300	1.00
208-96-8	Acenaphthylene		44.9	ug/L	0.300	1.00
62-53-3	Aniline		60.2	ug/L	4.20	10.0
120-12-7	Anthracene		50.3	ug/L	0.300	1.00
1912-24-9	Atrazine		56.9	ug/L	3.00	10.0
92-87-5	Benzidine		111	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		50.2	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		50.2	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		54.2	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		43.8	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708

Lab Sample ID: 1203876066

Client Sample: QC for batch 1701046

Client ID: LCS for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 18:38

Prep Date: 09/19/2017 10:10

Data File: s091917.B\41909.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WASTE WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		55.2	ug/L	0.300	1.00
65-85-0	Benzoic acid		37.1	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		52.0	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		54.3	ug/L	3.00	10.0
218-01-9	Chrysene		50.2	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		55.9	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		47.4	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		46.3	ug/L	0.300	1.00
132-64-9	Dibenzofuran		47.7	ug/L	3.00	10.0
84-66-2	Diethylphthalate		56.6	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		52.8	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine		45.9	ug/L	3.00	10.0
206-44-0	Fluoranthene		59.9	ug/L	0.300	1.00
86-73-7	Fluorene		51.3	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		47.4	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		35.8	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		19.9	ug/L	3.00	10.0
67-72-1	Hexachloroethane		42.1	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		45.9	ug/L	0.300	1.00
78-59-1	Isophorone		55.7	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		35.5	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		71.6	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		63.1	ug/L	3.00	10.0
91-20-3	Naphthalene		42.0	ug/L	0.300	1.00
98-95-3	Nitrobenzene		51.4	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		60.7	ug/L	3.00	10.0
85-01-8	Phenanthrene		50.2	ug/L	0.300	1.00
108-95-2	Phenol		26.3	ug/L	3.00	10.0
129-00-0	Pyrene		52.1	ug/L	0.300	1.00
110-86-1	Pyridine		36.4	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		62.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		53.7	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		65.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		53.4	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Matrix: WASTE WATER
Lab Sample ID: 1203876066	
Client Sample: QC for batch 1701046	Client: ARSL004
Client ID: LCS for batch 1701046	Method: SW846 3510C/8270D
Batch ID: 1701047	Inst: MSD4.I
Run Date: 09/19/2017 18:38	Analyst: JMB3
Prep Date: 09/19/2017 10:10	Aliquot: 1000 mL
Data File: s091917.B\s4i1909.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		56.4	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		65.5	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		53.1	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		52.7	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		59.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	112	100	ug/L	112	(32%-124%)
2-Fluorobiphenyl	37.8	50.0	ug/L	76	(32%-112%)
2-Fluorophenol	74.4	100	ug/L	74	(15%-88%)
Nitrobenzene-d5	47.9	50.0	ug/L	96	(36%-115%)
Phenol-d5	46.4	100	ug/L	46	(15%-91%)
p-Terphenyl-d14	59.4	50.0	ug/L	119	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-2708	Date Collected:	09/13/2017 10:44	Matrix:	W
Lab Sample ID:	1203876072	Date Received:	09/15/2017 08:55		
Client Sample:	QC for batch 1701046	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-142918MS	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1701047	Inst:	MSD4.I	Dilution:	1
Run Date:	09/19/2017 20:29	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	09/19/2017 10:10	Aliquot:	430 mL	Final Volume:	1 mL
Data File:	s091917.B\s4i1913.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		87.7	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		75.3	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		82.5	ug/L	6.98	23.3
122-66-7	Azobenzene		96.2	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		75.9	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		77.8	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		90.8	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		88.2	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		129	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		122	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		106	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		105	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		90.0	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		128	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		131	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		117	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		87.0	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		103	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		127	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		85.7	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		102	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		119	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		100	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		129	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		124	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		110	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		82.6	ug/L	6.98	23.3
83-32-9	Acenaphthene		107	ug/L	0.698	2.33
208-96-8	Acenaphthylene		97.9	ug/L	0.698	2.33
62-53-3	Aniline		105	ug/L	9.77	23.3
120-12-7	Anthracene		106	ug/L	0.698	2.33
1912-24-9	Atrazine		119	ug/L	6.98	23.3
92-87-5	Benzidine		238	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		106	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		101	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene		113	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		79.6	ug/L	0.698	2.33

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708	Date Collected: 09/13/2017 10:44	Matrix: W
Lab Sample ID: 1203876072	Date Received: 09/15/2017 08:55	
Client Sample: QC for batch 1701046	Client: ARSL004	Project: QC
Client ID: CAWA-17-142918MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 20:29	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091917.B\41913.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		115	ug/L	0.698	2.33
65-85-0	Benzoic acid		142	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		105	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		107	ug/L	6.98	23.3
218-01-9	Chrysene		104	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		116	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		93.7	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		84.7	ug/L	0.698	2.33
132-64-9	Dibenzofuran		102	ug/L	6.98	23.3
84-66-2	Diethylphthalate		120	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		112	ug/L	6.98	23.3
88-85-7	Dinoseb	U	6.98	ug/L	6.98	23.3
122-39-4	Diphenylamine		95.9	ug/L	6.98	23.3
206-44-0	Fluoranthene		129	ug/L	0.698	2.33
86-73-7	Fluorene		111	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		98.3	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		71.0	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		47.6	ug/L	6.98	23.3
67-72-1	Hexachloroethane		75.9	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		83.6	ug/L	0.698	2.33
78-59-1	Isophorone		111	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		84.5	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	6.98	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	6.98	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine		127	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		120	ug/L	6.98	23.3
91-20-3	Naphthalene		85.0	ug/L	0.698	2.33
98-95-3	Nitrobenzene		103	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	6.98	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		144	ug/L	6.98	23.3
85-01-8	Phenanthrene		106	ug/L	0.698	2.33
108-95-2	Phenol		77.1	ug/L	6.98	23.3
129-00-0	Pyrene		101	ug/L	0.698	2.33
110-86-1	Pyridine		82.4	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		110	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		106	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		106	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		101	ug/L	6.98	23.3

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/13/2017 10:44	Matrix: W
Lab Sample ID: 1203876072	Date Received: 09/15/2017 08:55	
Client Sample: QC for batch 1701046	Client: ARSL004	Project: QC
Client ID: CAWA-17-142918MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 20:29	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091917.B\s4i1913.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		120	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		146	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		103	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		115	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		134	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	271	233	ug/L	116	(32%-124%)
2-Fluorobiphenyl	83.9	116	ug/L	72	(32%-112%)
2-Fluorophenol	162	233	ug/L	70	(15%-88%)
Nitrobenzene-d5	91.5	116	ug/L	79	(36%-115%)
Phenol-d5	131	233	ug/L	56	(15%-91%)
p-Terphenyl-d14	112	116	ug/L	97	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2708	Date Collected: 09/13/2017 10:44	Matrix: W
Lab Sample ID: 1203876073	Date Received: 09/15/2017 08:55	
Client Sample: QC for batch 1701046	Client: ARSL004	Project: QC
Client ID: CAWA-17-142918MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 20:57	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091917.B\s4i1914.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		78.6	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		69.7	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		78.8	ug/L	6.98	23.3
122-66-7	Azobenzene		89.4	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		72.8	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		74.9	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		86.0	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		85.2	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		122	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		115	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		99.2	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		101	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		88.4	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		132	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		126	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		112	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		79.3	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		104	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		122	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		81.5	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		100	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		109	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		91.8	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		128	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		125	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		105	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		99.6	ug/L	6.98	23.3
83-32-9	Acenaphthene		98.6	ug/L	0.698	2.33
208-96-8	Acenaphthylene		91.6	ug/L	0.698	2.33
62-53-3	Aniline		102	ug/L	9.77	23.3
120-12-7	Anthracene		97.8	ug/L	0.698	2.33
1912-24-9	Atrazine		109	ug/L	6.98	23.3
92-87-5	Benzidine		178	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		98.8	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		95.0	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene		105	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		84.1	ug/L	0.698	2.33

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708	Date Collected: 09/13/2017 10:44	Matrix: W
Lab Sample ID: 1203876073	Date Received: 09/15/2017 08:55	
Client Sample: QC for batch 1701046	Client: ARSL004	Project: QC
Client ID: CAWA-17-142918MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 20:57	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091917.B\41914.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		108	ug/L	0.698	2.33
65-85-0	Benzoic acid		150	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		105	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		96.9	ug/L	6.98	23.3
218-01-9	Chrysene		98.8	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		105	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		71.8	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		84.7	ug/L	0.698	2.33
132-64-9	Dibenzofuran		96.6	ug/L	6.98	23.3
84-66-2	Diethylphthalate		113	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		107	ug/L	6.98	23.3
88-85-7	Dinoseb	U	6.98	ug/L	6.98	23.3
122-39-4	Diphenylamine		89.0	ug/L	6.98	23.3
206-44-0	Fluoranthene		119	ug/L	0.698	2.33
86-73-7	Fluorene		105	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		90.3	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		66.0	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		42.5	ug/L	6.98	23.3
67-72-1	Hexachloroethane		72.1	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		86.5	ug/L	0.698	2.33
78-59-1	Isophorone		107	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		81.7	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	6.98	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	6.98	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine		124	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		119	ug/L	6.98	23.3
91-20-3	Naphthalene		80.1	ug/L	0.698	2.33
98-95-3	Nitrobenzene		99.5	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	6.98	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		132	ug/L	6.98	23.3
85-01-8	Phenanthrene		97.7	ug/L	0.698	2.33
108-95-2	Phenol		77.3	ug/L	6.98	23.3
129-00-0	Pyrene		101	ug/L	0.698	2.33
110-86-1	Pyridine		62.2	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		106	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		103	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		106	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		80.3	ug/L	6.98	23.3

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Date Collected: 09/13/2017 10:44	Matrix: W
Lab Sample ID: 1203876073	Date Received: 09/15/2017 08:55	
Client Sample: QC for batch 1701046	Client: ARSL004	Project: QC
Client ID: CAWA-17-142918MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1701047	Inst: MSD4.I	Dilution: 1
Run Date: 09/19/2017 20:57	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 09/19/2017 10:10	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s091917.B\s4i1914.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		120	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		142	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		102	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		109	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		141	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	255	233	ug/L	110	(32%-124%)
2-Fluorobiphenyl	79.0	116	ug/L	68	(32%-112%)
2-Fluorophenol	166	233	ug/L	71	(15%-88%)
Nitrobenzene-d5	89.3	116	ug/L	77	(36%-115%)
Phenol-d5	136	233	ug/L	59	(15%-91%)
p-Terphenyl-d14	109	116	ug/L	94	(36%-121%)

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 1 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203877908

Client Sample: QC for batch 1701046

Client ID: LCSD for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 19:05

Prep Date: 09/19/2017 10:10

Data File: s091917.B\s4i1910.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		36.9	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		33.1	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		42.9	ug/L	3.00	10.0
122-66-7	Azobenzene		44.5	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		39.9	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		39.9	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		38.7	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		38.0	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		54.8	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		54.1	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		46.9	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		49.2	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		41.4	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		50.8	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		55.7	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		51.8	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		37.0	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		58.9	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		53.4	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		37.2	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		47.9	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		46.9	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		45.3	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		57.4	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		58.8	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		47.8	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		13.2	ug/L	3.00	10.0
83-32-9	Acenaphthene		46.1	ug/L	0.300	1.00
208-96-8	Acenaphthylene		42.2	ug/L	0.300	1.00
62-53-3	Aniline		59.5	ug/L	4.20	10.0
120-12-7	Anthracene		46.2	ug/L	0.300	1.00
1912-24-9	Atrazine		52.9	ug/L	3.00	10.0
92-87-5	Benzidine		71.6	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		46.8	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		45.1	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		49.3	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		37.1	ug/L	0.300	1.00

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 2 of 3

SDG Number: 2017-2708

Lab Sample ID: 1203877908

Client Sample: QC for batch 1701046

Client ID: LCSD for batch 1701046

Batch ID: 1701047

Run Date: 09/19/2017 19:05

Prep Date: 09/19/2017 10:10

Data File: s091917.B\4i1910.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		51.7	ug/L	0.300	1.00
65-85-0	Benzoic acid		38.6	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		54.1	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		52.2	ug/L	3.00	10.0
218-01-9	Chrysene		46.6	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		51.4	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		42.8	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		39.0	ug/L	0.300	1.00
132-64-9	Dibenzofuran		44.8	ug/L	3.00	10.0
84-66-2	Diethylphthalate		52.2	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		49.6	ug/L	3.00	10.0
88-85-7	Dinoseb	U	3.00	ug/L	3.00	10.0
122-39-4	Diphenylamine		44.3	ug/L	3.00	10.0
206-44-0	Fluoranthene		52.7	ug/L	0.300	1.00
86-73-7	Fluorene		47.9	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		44.3	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		31.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		18.4	ug/L	3.00	10.0
67-72-1	Hexachloroethane		39.8	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		38.4	ug/L	0.300	1.00
78-59-1	Isophorone		51.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		35.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	3.00	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	3.00	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		70.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		62.3	ug/L	3.00	10.0
91-20-3	Naphthalene		37.1	ug/L	0.300	1.00
98-95-3	Nitrobenzene		47.1	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	3.00	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		59.0	ug/L	3.00	10.0
85-01-8	Phenanthrene		46.6	ug/L	0.300	1.00
108-95-2	Phenol		25.8	ug/L	3.00	10.0
129-00-0	Pyrene		52.3	ug/L	0.300	1.00
110-86-1	Pyridine		33.7	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		60.7	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		50.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		63.1	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		49.9	ug/L	3.00	10.0

**Semi-Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-2708	Matrix: WATER
Lab Sample ID: 1203877908	
Client Sample: QC for batch 1701046	Client: ARSL004
Client ID: LCSD for batch 1701046	Method: SW846 3510C/8270D
Batch ID: 1701047	Inst: MSD4.I
Run Date: 09/19/2017 19:05	Analyst: JMB3
Prep Date: 09/19/2017 10:10	Aliquot: 1000 mL
Data File: s091917.B\s4i1910.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		55.8	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		61.9	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		52.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		50.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		52.7	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	116	100	ug/L	116	(32%-124%)
2-Fluorobiphenyl	33.9	50.0	ug/L	68	(32%-112%)
2-Fluorophenol	72.5	100	ug/L	72	(15%-88%)
Nitrobenzene-d5	43.9	50.0	ug/L	88	(36%-115%)
Phenol-d5	46.1	100	ug/L	46	(15%-91%)
p-Terphenyl-d14	59.3	50.0	ug/L	119	(36%-121%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Procedure: **Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)**

Analytical Method: SW-846:6850

Prep Method: SW-846:6850

Analytical Batch Number: 1699857

Prep Batch Number: 1699856

Sample Analysis

Sample ID	Client ID
432512001	432512001 (CAPA-17-142952)
432512006	432512006 (CAWA-17-143057)
432512012	432512012 (CAWA-17-143061)
1203872841	Interference Check Sample (ICS)
1203872837	Method Blank (MB)
1203872838	Laboratory Control Sample (LCS)
1203872839	432512001(CAPA-17-142952) Matrix Spike (MS)
1203872840	432512001(CAPA-17-142952) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

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-067 REV# 14.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this SDG. Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

ICV Requirements

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

CCB Requirements

All continuing calibration blanks (CCB) bracketing the analyses associated with this batch were within acceptance criteria.

CCV Requirements

All continuing calibration checks (CCV) requirements were met by all bracketing CCV standards.

Low Level Standard (CRI) Requirements

All low level calibration verification (CRI) requirements were met by all bracketing CRI standards.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The ICS spike recoveries met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Client sample 432512001 (CAPA-17-142952) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPDs between the MS and MSD met the acceptance limits.

Internal Standard Area Acceptance

The internal standard areas were within the required acceptance criteria for all samples and QC.

Retention Time

During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard. The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by DOD QSM 5.0, has been used. In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

Technical Information

Holding Time Specifications

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based

on the associated methodology, which assigns the date and time from sample collection of 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.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Manual Integrations

Manual integrations were not required for any data file associated with this SDG.

Method Comments

The samples in this SDG were not originally analyzed using EPA Method 314.0.

Additional Comments

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value. The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred. Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are internally corrected for using Perchlorate-O (18).

Perchlorate Isotope Ratio

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples. Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Perchlorate analysis. It is coupled with a Micromass Quattro Ultima Mass Spectrometer/Mass Spectrometer. It is designated as LCMSMS #2. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis. The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for Perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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 will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

The LC-MS/MS Perchlorate analysis was performed on a Quatro Ultima LC/MS/MS.

Chromatographic separation of Perchlorate is accomplished through analysis on the following anion column:

Dionex: IonPac AG-16 2 x 50 mm.

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: 2017-2708 GEL Work Order: 432512

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
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 14 SEP 2017

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142952Date Received: 08-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 432512001Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1	13-SEP-17 14:50	per0913016a
	Perchlorate Isotope Ratio						1	13-SEP-17 14:50	per0913016a
14797-73-0	Perchlorate-101	.05	.2	0.0504	ug/L	J	1	13-SEP-17 14:50	per0913016a
	Perchlorate-O(18)			0.500	ug/L		1	13-SEP-17 14:50	per0913016a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-143057Date Received: 08-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 432512006Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.244	ug/L		1	13-SEP-17 15:22	per0913019a
	Perchlorate Isotope Ratio			2.92			1	13-SEP-17 15:22	per0913019a
14797-73-0	Perchlorate-101	.05	.2	0.238	ug/L		1	13-SEP-17 15:22	per0913019a
	Perchlorate-O(18)			0.504	ug/L		1	13-SEP-17 15:22	per0913019a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-143061Date Received: 08-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 432512012Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1	13-SEP-17 15:33	per0913020a
	Perchlorate Isotope Ratio						1	13-SEP-17 15:33	per0913020a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	13-SEP-17 15:33	per0913020a
	Perchlorate-O(18)			0.475	ug/L		1	13-SEP-17 15:33	per0913020a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Quality Control Summary

Perchlorate Laboratory Control Sample

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No. (SDG): 2017-2708

Extract Batch Code: 1699856

Date Filtered: 12-SEP-17

Matrix: WATER

Sample ID: 1203872838

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.192	ug/L	96		85 - 115
Perchlorate Isotope Ratio		2.75				-
Perchlorate-101	0.200	.199	ug/L	99		85 - 115
Perchlorate-O(18)		.508	ug/L			-

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Perchlorate Spike/Spike Duplicate Summary

Lab Name: General Engineering Laboratories

Lab Code: GEL

GEL Job No (SDG): 2017-2708

Extract Batch Code: 1699856

Date Extracted: 12-SEP-17

GEL MS/PS ID: 1203872839

Client ID: CAPA-17-142952

GEL MSD/PSD ID: 1203872840

QC Type: MS

Compound^	Spike Added	Sample Conc	Units	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Recovery Limit
Perchlorate	0.200	0.0471	ug/L	0.241	97	.218	86	10	30	75 - 125
Perchlorate Isotope Ratio	0	2.66		3.04		2.79		9		-
Perchlorate-101	0.200	0.0504	ug/L	0.226	88	.223	86	1	30	75 - 125
Perchlorate-O(18)	0	0.500	ug/L	0.501		.506		1		-

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

Quality Control Data

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 12-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 1203872837Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.050	ug/L	U	1	13-SEP-17 14:17	per0913013a
	Perchlorate Isotope Ratio						1	13-SEP-17 14:17	per0913013a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	13-SEP-17 14:17	per0913013a
	Perchlorate-O(18)			0.516	ug/L		1	13-SEP-17 14:17	per0913013a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 12-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 1203872838Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.192	ug/L	J	1	13-SEP-17 14:28	per0913014a
	Perchlorate Isotope Ratio			2.75			1	13-SEP-17 14:28	per0913014a
14797-73-0	Perchlorate-101	.05	.2	0.199	ug/L	J	1	13-SEP-17 14:28	per0913014a
	Perchlorate-O(18)			0.508	ug/L		1	13-SEP-17 14:28	per0913014a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-2708GEL Sample ID: 1203872841Date Filtered: 12-SEP-17Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.202	ug/L		1	13-SEP-17 14:39	per0913015a
	Perchlorate Isotope Ratio			2.98			1	13-SEP-17 14:39	per0913015a
14797-73-0	Perchlorate-101	.05	.2	0.193	ug/L	J	1	13-SEP-17 14:39	per0913015a
	Perchlorate-O(18)			0.510	ug/L		1	13-SEP-17 14:39	per0913015a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142952MSDate Received: 08-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 1203872839Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.241	ug/L		1	13-SEP-17 15:01	per0913017a
	Perchlorate Isotope Ratio			3.04			1	13-SEP-17 15:01	per0913017a
14797-73-0	Perchlorate-101	.05	.2	0.226	ug/L		1	13-SEP-17 15:01	per0913017a
	Perchlorate-O(18)			0.501	ug/L		1	13-SEP-17 15:01	per0913017a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1699856Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142952MSDDate Received: 08-SEP-17GEL Job No (SDG): 2017-2708GEL Sample ID: 1203872840Date Filtered: 12-SEP-17Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.218	ug/L		1	13-SEP-17 15:12	per0913018a
	Perchlorate Isotope Ratio			2.79			1	13-SEP-17 15:12	per0913018a
14797-73-0	Perchlorate-101	.05	.2	0.223	ug/L		1	13-SEP-17 15:12	per0913018a
	Perchlorate-O(18)			0.506	ug/L		1	13-SEP-17 15:12	per0913018a

^ When the analyte name is Perchlorate Isotope Ratio the concentration is a unitless value calculated from the ratio of Perchlorate peak area to Perchlorate-101 peak area. The Perchlorate-101 and isotopic ratio results are provided for qualitative purposes only. The results are used to verify the presence and quantitation of Perchlorate.

*Concentration =

$$\text{Instrument Value} \times \frac{\text{Concentrated Extract Volume}}{\text{Aliquot}} \times \frac{1}{\% \text{Solids}}$$

Explosives by LCMSMS Analysis

Case Narrative

**Explosives by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Procedure: The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1699848

Prep Batch Number: 1699847

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8330B:

Sample ID	Client ID
432512002	CAPA-17-142953
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203872817	Method Blank (MB)
1203872818	Laboratory Control Sample (LCS)
1203872819	432512002(CAPA-17-142953) Matrix Spike (MS)
1203872820	432512002(CAPA-17-142953) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

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-068 REV# 7.

Calibration Information

Initial Calibration

All initial calibration requirements for this analysis have been met for this SDG.

Calibration Verification Standard Requirements

All associated calibration verification standards (ICV and CCV) for this analysis met the acceptance criteria.

Calibration Blank Requirements

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may

have a concentration for target analytes in the Found column. These values should be zero.

CRI Requirements

All low level calibration verification (CRI) requirements for this analysis were met by all bracketing CRI standards.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG for this analysis met the acceptance criteria.

Surrogate Recoveries

All the surrogate recoveries were within the established acceptance criteria in this SDG in this analytical batch for this analysis.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 432512002 (CAPA-17-142953) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS spike recoveries were within the established acceptance limits for this analysis.

MS/MSD Relative Percent Difference (RPD) Statement

The RPDs between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance

The internal standard responses were within the required acceptance criteria for all samples and QC in this SDG.

Technical Information

Holding Time Specifications

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of 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. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water. Sample 432512009 (CAWA-17-143059) was further diluted to bring the over range concentration within the calibration range. The final dilution in each case takes the 1:1 v/v dilution into account.

Analyte	432512
	009
RDX	5X

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch for this analysis.

Miscellaneous Information

Manual Integrations

Manual integrations were not required for any data file associated with this SDG.

Additional Comments

Due to software limitations, all initial calibration blanks must be designated as XIB001 in order for the forms to be correct. Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data. Relative Retention Time (RRT) is used by the laboratory to establish peak identity. The RRT of each target analyte is calculated using the retention time of the corresponding internal standard. The RRT of each analyte in a sample must be within 0.1 of the analyte's calculated RRT in the ICV.

System Configuration

The laboratory utilizes an Agilent 1100 liquid chromatography instrument for either Primary or Secondary analyte analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as either LC/MS/MS #3 or LC/MS/MS #4. The laboratory also utilizes a Shimadzu Nexera XC liquid chromatography instrument for Primary and/or Secondary analyte analysis. It is coupled with an Applied Biosystems 5500 Mass Spectrometer/ Mass Spectrometer, designated as LC/MS/MS #5. All are fitted with an APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for both the Primary and Secondary analyte analysis.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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 will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

The LC-MS/MS Explosives analysis was performed on a ABSciex 5500 Qtrap LC/MS/MS.

The detection of the Primary and Secondary Nitroaromatic and Nitramine analytes is accomplished through analysis on the following reversed phase column:

Phenomenex: Ultracarb 5u ODS (20), 250 x 4.60 mm ID.

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: 2017-2708 GEL Work Order: 432512

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
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 22 SEP 2017

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512002

Sample Amount 940 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913019.wiff

Date Analyzed: 13-SEP-17 21:47

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.0851	U	0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.0851	U	0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.0851	U	0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.0851	U	0.0851	0.266
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.0851	U	0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.0851	U	0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.0851	U	0.0851	0.532
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.0851	U	0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.0851	U	0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.0851	U	0.0851	0.266
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.0851	U	0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.0851	U	0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.0851	U	0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512002

Sample Amount 940 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.0851	U	0.0851	0.266
99-65-0	<i>m-Dinitrobenzene</i>				
88-72-2	o-Nitrotoluene	.0872	U	0.0872	0.266
88-72-2	<i>o-Nitrotoluene</i>				
78-11-5	PETN	.106	U	0.106	0.532
78-11-5	<i>PETN</i>				
2691-41-0	HMX	.129	J	0.0851	0.266
2691-41-0	<i>HMX</i>				
99-99-0	p-Nitrotoluene	.16	U	0.160	0.532
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	.319	U	0.319	1.06
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	.319	U	0.319	1.06
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	.319	U	0.319	1.06
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	.532	U	0.532	2.66
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	.532	U	0.532	2.66
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-143059

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512009

Sample Amount 950 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913022.wiff

Date Analyzed: 13-SEP-17 23:33

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.0842	U	0.0842	0.263
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.0842	U	0.0842	0.263
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.0842	U	0.0842	0.263
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.0842	U	0.0842	0.263
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.0842	U	0.0842	0.263
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.0842	U	0.0842	0.263
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.0842	U	0.0842	0.526
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.0842	U	0.0842	0.263
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.0842	U	0.0842	0.263
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.0842	U	0.0842	0.263
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.0842	U	0.0842	0.263
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.0842	U	0.0842	0.263
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.0842	U	0.0842	0.263
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-143059

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512009

Sample Amount 950 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.0842	U	0.0842	0.263
99-65-0	<i>m-Dinitrobenzene</i>				
88-72-2	o-Nitrotoluene	.0863	U	0.0863	0.263
88-72-2	<i>o-Nitrotoluene</i>				
78-11-5	PETN	.105	U	0.105	0.526
78-11-5	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.158	U	0.158	0.526
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	.316	U	0.316	1.05
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	.316	U	0.316	1.05
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	.316	U	0.316	1.05
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	.526	U	0.526	2.63
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	.526	U	0.526	2.63
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-143059

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512009

Sample Amount 950 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913033.wiff

Date Analyzed: 14-SEP-17 12:40

Dilution Factor: 5

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-82-4	RDX	17.1		0.211	0.658
121-82-4	RDX				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-143061

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512012

Sample Amount 900 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913023.wiff

Date Analyzed: 14-SEP-17 00:09

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.0889	U	0.0889	0.278
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.0889	U	0.0889	0.278
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.0889	U	0.0889	0.278
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.0889	U	0.0889	0.278
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.0889	U	0.0889	0.278
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.0889	U	0.0889	0.278
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.0889	U	0.0889	0.278
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.0889	U	0.0889	0.556
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.0889	U	0.0889	0.278
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.0889	U	0.0889	0.278
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.0889	U	0.0889	0.278
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.0889	U	0.0889	0.278
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.0889	U	0.0889	0.278
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-143061

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 432512012

Sample Amount 900 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.0889	U	0.0889	0.278
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.0889	U	0.0889	0.278
99-65-0	m-Dinitrobenzene				
88-72-2	o-Nitrotoluene	.0911	U	0.0911	0.278
88-72-2	o-Nitrotoluene				
78-11-5	PETN	.111	U	0.111	0.556
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.167	U	0.167	0.556
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	.333	U	0.333	1.11
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	.333	U	0.333	1.11
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	.333	U	0.333	1.11
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	.556	U	0.556	2.78
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	.556	U	0.556	2.78
6629-29-4	2,4-Diamino-6-nitrotoluene				

Quality Control Summary

High Explosives Surrogate Recovery Summary**Lab Name:** GEL Laboratories LLC**GEL Job No (SDG):** 2017-2708**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
432512002	CAPA-17-142953	94	55 - 115	
432512009	CAWA-17-143059	103	55 - 115	
432512009	CAWA-17-143059DL	103	55 - 115	
432512012	CAWA-17-143061	101	55 - 115	
1203872817	MB for batch 1699847	97	55 - 115	
1203872818	LCS for batch 1699847	91	55 - 115	
1203872819	CAPA-17-142953MS	88	55 - 115	
1203872820	CAPA-17-142953MSD	97	55 - 115	

DNT = 3,4-Dinitrotoluene

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Extract Batch Code: 1699847

Date Extracted: 12-SEP-17

GEL LCS ID: 1203872818

GEL LCSDUP ID: .

Analysis Date/Time: 13-SEP-17 20:36

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
1,3,5-Trinitrobenzene	5	4.82	96					70 - 110
2,4,6-Trinitrotoluene	5	4.52	90					69 - 113
2,4-Diamino-6-nitrotoluene	5	5.45	109					50 - 121
2,4-Dinitrotoluene	5	4.24	85					71 - 110
2,6-Diamino-4-nitrotoluene	5	4.51	90					53 - 127
2,6-Dinitrotoluene	5	4.4	88					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.33	87					70 - 112
3,5-Dinitroaniline	5	4.39	88					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.39	88					74 - 116
DNX	.5	.519	104					65 - 113
HMX	5	4.4	88					58 - 113
MNX	.5	.523	105					66 - 114
Nitrobenzene	5	3.86	77					64 - 115
PETN	5	4.18	84					57 - 126
RDX	5	4.84	97					64 - 117
TATB	1.25	1.19	95					47 - 135
TNX	.5	.47	94					51 - 110
Tetryl	5	4.71	94					55 - 122
m-Dinitrobenzene	5	4.74	95					74 - 117
m-Nitrotoluene	5	4.44	89					66 - 114
o-Nitrotoluene	5	4.48	90					64 - 115
p-Nitrotoluene	5	4.27	85					66 - 127
tris(o-cresyl) phosphate	5	3.49	70					43 - 104

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

3
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAPA-17-142953

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Extract Batch Code: 1699847

Date Extracted: 12-SEP-17

GEL Spike ID: 1203872819

GEL SpikeDup ID: 1203872820

Analysis Date/Time: 13-SEP-17 22:22

MSD Analysis Date/Time: 13-SEP-17 22:58

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
MNX	.52632	0	.532	101	.531	100	0	30	60 - 121
Nitrobenzene	5.26316	0	4.53	86	4.31	81	5	30	62 - 116
PETN	5.26316	0	4.65	88	5.28	99	13	30	51 - 131
RDX	5.26316	.0454	4.93	93	5.08	95	3	30	57 - 125
TATB	1.31579	0	1.42	108	1.52	114	6	30	38 - 149
TNX	.52632	0	.509	97	.492	93	3	30	46 - 120
Tetryl	5.26316	0	3.99	76	4.05	76	2	30	50 - 126
m-Dinitrobenzene	5.26316	0	5.35	102	5.21	98	3	30	74 - 117
m-Nitrotoluene	5.26316	0	4.46	85	4.55	86	2	30	59 - 120
o-Nitrotoluene	5.26316	0	4.42	84	4.55	86	3	30	56 - 119
p-Nitrotoluene	5.26316	0	4.72	90	4.81	90	2	30	61 - 129
tris(o-cresyl) phosphate	5.26316	0	3.8	72	4.14	78	9	30	38 - 105
1,3,5-Trinitrobenzene	5.26316	0	4.58	87	4.52	85	1	30	67 - 111
2,4,6-Trinitrotoluene	5.26316	0	4.54	86	4.53	85	0	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.26316	0	4.84	92	5.88	111	19	30	50 - 121
2,4-Dinitrotoluene	5.26316	0	4.64	88	4.77	90	3	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.26316	0	4.81	91	4.66	88	3	30	53 - 127
2,6-Dinitrotoluene	5.26316	0	4.54	86	4.78	90	5	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.26316	0	4.59	87	4.74	89	3	30	67 - 115
3,5-Dinitroaniline	5.26316	0	4.8	91	4.95	93	3	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.26316	0	4.67	89	5.09	96	9	30	65 - 120
DNX	.52632	0	.539	102	.517	97	4	30	53 - 124
HMX	5.26316	.129	5.02	93	4.87	89	3	30	44 - 128

#Column to be used to flag recovery and RPD values with an asterisk

Quality Control Data

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1699847

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872817

Sample Amount 1000 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913016.wiff

Date Analyzed: 13-SEP-17 20:00

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.08	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.08	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.08	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.08	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.08	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.08	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.08	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.08	U	0.080	0.500
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.08	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.08	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.08	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.08	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.08	U	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1699847

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872817

Sample Amount 1000 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.08	U	0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.08	U	0.080	0.250
99-65-0	m-Dinitrobenzene				
88-72-2	o-Nitrotoluene	.082	U	0.082	0.250
88-72-2	o-Nitrotoluene				
78-11-5	PETN	.1	U	0.100	0.500
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.15	U	0.150	0.500
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	.3	U	0.300	1.00
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	.3	U	0.300	1.00
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	.3	U	0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	.5	U	0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	.5	U	0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1699847

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872818

Sample Amount 1000 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913017.wiff

Date Analyzed: 13-SEP-17 20:36

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.47		0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
80251-29-2	DNX	.519		0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
5755-27-1	MNX	.523		0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
3058-38-6	TATB	1.19		0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
78-30-8	tris(o-cresyl) phosphate	3.49		0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
98-95-3	Nitrobenzene	3.86		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
78-11-5	PETN	4.18		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
121-14-2	2,4-Dinitrotoluene	4.24		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.27		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.33		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.39		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.39		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	4.4		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1699847

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872818

Sample Amount 1000 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
606-20-2	2,6-Dinitrotoluene	4.4		0.080	0.250
606-20-2	2,6-Dinitrotoluene				
99-08-1	m-Nitrotoluene	4.44		0.080	0.250
99-08-1	m-Nitrotoluene				
88-72-2	o-Nitrotoluene	4.48		0.082	0.250
88-72-2	o-Nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.51		0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	4.52		0.080	0.250
118-96-7	2,4,6-Trinitrotoluene				
479-45-8	Tetryl	4.71		0.080	0.500
479-45-8	Tetryl				
99-65-0	m-Dinitrobenzene	4.74		0.080	0.250
99-65-0	m-Dinitrobenzene				
99-35-4	1,3,5-Trinitrobenzene	4.82		0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
121-82-4	RDX	4.84		0.080	0.250
121-82-4	RDX				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.45		0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953(432512002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872819

Sample Amount 950 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913020.wiff

Date Analyzed: 13-SEP-17 22:22

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	.509		0.0842	0.263
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	.532		0.0842	0.263
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	.539		0.0842	0.263
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	1.42		0.316	1.05
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	3.8		0.316	1.05
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	3.99		0.0842	0.526
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.42		0.0863	0.263
99-08-1 <i>99-08-1</i>	m-Nitrotoluene <i>m-Nitrotoluene</i>	4.46		0.0842	0.263
98-95-3 <i>98-95-3</i>	Nitrobenzene <i>Nitrobenzene</i>	4.53		0.0842	0.263
118-96-7 <i>118-96-7</i>	2,4,6-Trinitrotoluene <i>2,4,6-Trinitrotoluene</i>	4.54		0.0842	0.263
606-20-2 <i>606-20-2</i>	2,6-Dinitrotoluene <i>2,6-Dinitrotoluene</i>	4.54		0.0842	0.263
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.58		0.0842	0.263
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	4.59		0.0842	0.263

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953(432512002MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872819

Sample Amount 950 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	4.64		0.0842	0.263
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
78-11-5	PETN	4.65		0.105	0.526
<i>78-11-5</i>	<i>PETN</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.67		0.0842	0.263
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.72		0.158	0.526
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.8		0.316	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.81		0.526	2.63
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.84		0.526	2.63
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	4.93		0.0842	0.263
<i>121-82-4</i>	<i>RDX</i>				
2691-41-0	HMX	5.02		0.0842	0.263
<i>2691-41-0</i>	<i>HMX</i>				
99-65-0	m-Dinitrobenzene	5.35		0.0842	0.263
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953(432512002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872820

Sample Amount 940 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0913021.wiff

Date Analyzed: 13-SEP-17 22:58

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.492		0.0851	0.266
<i>13980-04-6</i>	<i>TNX</i>				
80251-29-2	DNX	.517		0.0851	0.266
<i>80251-29-2</i>	<i>DNX</i>				
5755-27-1	MNX	.531		0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
3058-38-6	TATB	1.52		0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
479-45-8	Tetryl	4.05		0.0851	0.532
<i>479-45-8</i>	<i>Tetryl</i>				
78-30-8	tris(o-cresyl) phosphate	4.14		0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
98-95-3	Nitrobenzene	4.31		0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.52		0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.53		0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
88-72-2	o-Nitrotoluene	4.55		0.0872	0.266
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-08-1	m-Nitrotoluene	4.55		0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.66		0.532	2.66
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.74		0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142953(432512002MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2708

Matrix: WATER

GEL Sample ID: 1203872820

Sample Amount 940 mL

Date Received: 08-SEP-17

Moisture: .

Extraction Batch ID: 1699847

Extraction Type Sol Exchange

Date Extracted: 12-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	4.77		0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.78		0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.81		0.160	0.532
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
2691-41-0	HMX	4.87		0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
618-87-1	3,5-Dinitroaniline	4.95		0.319	1.06
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
121-82-4	RDX	5.08		0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.09		0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	5.21		0.0851	0.266
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
78-11-5	PETN	5.28		0.106	0.532
<i>78-11-5</i>	<i>PETN</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.88		0.532	2.66
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2708Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 13-SEP-17 11:08GEL Data File: EXP0913001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2708Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 13-SEP-17 11:44GEL Data File: EXP0913002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 13-SEP-17 16:27

GEL Data File: EXP0913010.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 13-SEP-17 18:49

GEL Data File: EXP0913014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 14-SEP-17 00:44

GEL Data File: EXP0913024.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 14-SEP-17 01:55

GEL Data File: EXP0913026.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 14-SEP-17 09:43

GEL Data File: EXP0913028.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 14-SEP-17 10:18

GEL Data File: EXP0913029.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 14-SEP-17 11:29

GEL Data File: EXP0913031.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 14-SEP-17 13:16

GEL Data File: EXP0913034.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 14-SEP-17 16:13

GEL Data File: EXP0913039.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2708

Lab Code: GEL

Lab Sample ID: XIBLK11

Analysis Date: 14-SEP-17 17:24

GEL Data File: EXP0913041.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0

PCB Analysis

Case Narrative

**GC Semivolatile PCB
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Procedure:	Analysis of The Analysis of Polychlorinated Biphenyls by GC/ECD by ECD
Analytical Method:	SW846 3535A/8082
Prep Method:	SW846 3535A
Analytical Batch Number:	1701042
Prep Batch Number:	1701040

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8082:

Sample ID	Client ID
432512007	CAWA-17-143059
432512010	CAWA-17-143061
1203876046	Method Blank (MB)
1203876047	Laboratory Control Sample (LCS)
1203877911	432512007(CAWA-17-143059) Matrix Spike (MS)
1203877912	432512007(CAWA-17-143059) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Preparation/Analytical Method Verification

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-040 REV# 24.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria for the target Aroclors. All analytes were within the established retention time windows for this method.

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

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS/LCSD spike recoveries met the acceptance limits.

QC Sample Designation

Sample 432512007 (CAWA-17-143059) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS/MSD) Recovery Statement

The MS/MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of 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. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All samples and QC in this batch were cleaned with activated copper in order to remove sulfur. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns.

Sample Dilutions

The samples in this SDG in this batch did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required for the samples reported in this batch.

Miscellaneous Information**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. 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.

Manual integrations

Manual integrations were not required for samples and QC samples associated with this SDG in this batch.

Additional Comments

The column 1 has been chosen as the primary column. The data are reported from the column 1 for all samples in this batch.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD8A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD8A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

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: 2017-2708 GEL Work Order: 432512

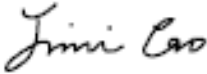
The Qualifiers in this report are defined as follows:

- * 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: Jimin Cao

Date: 21 SEP 2017

Title: Data Validator

Sample Data Summary

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708
Lab Sample ID: 432512007
Client Sample: PCB
Client ID: CAWA-17-143059
Batch ID: 1701042
Run Date: 09/20/2017 10:51
Prep Date: 09/19/2017 17:00
Data File: 092017.B\8i2026.D
 092017.B\8i2026.D

Date Collected: 09/06/2017 10:43
Date Received: 09/08/2017 09:20
Client: ARSL004
Method: SW846 3535A/8082
Inst: ECD8A.I
Analyst: JXM
Aliquot: 970 mL
Column: 1 RTX-CLPEST1
 2 RTX-CLPEST2

Matrix: W
Project: ESHL00114
SOP Ref: GL-OA-E-040
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0343	ug/L	0.0343	0.103	1
11104-28-2	Aroclor-1221	U	0.0343	ug/L	0.0343	0.103	1
11141-16-5	Aroclor-1232	U	0.0343	ug/L	0.0343	0.103	1
53469-21-9	Aroclor-1242	U	0.0343	ug/L	0.0343	0.103	1
12672-29-6	Aroclor-1248	U	0.0343	ug/L	0.0343	0.103	1
11097-69-1	Aroclor-1254	U	0.0343	ug/L	0.0343	0.103	1
11096-82-5	Aroclor-1260	U	0.0343	ug/L	0.0343	0.103	1
37324-23-5	Aroclor-1262	U	0.0343	ug/L	0.0343	0.103	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.128	0.206	ug/L	62 (33%-122%)
Decachlorobiphenyl	0.183	0.206	ug/L	89 (35%-138%)

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708
Lab Sample ID: 432512010
Client Sample: PCB
Client ID: CAWA-17-143061
Batch ID: 1701042
Run Date: 09/20/2017 11:35
Prep Date: 09/19/2017 17:00
Data File: 092017.B\8i2029.D
 092017.B\8i2029.D

Date Collected: 09/06/2017 08:15
Date Received: 09/08/2017 09:20
Client: ARSL004
Method: SW846 3535A/8082
Inst: ECD8A.I
Analyst: JXM
Aliquot: 930 mL
Column: 1 RTX-CLPEST1
 2 RTX-CLPEST2

Matrix: W
Project: ESHL00114
SOP Ref: GL-OA-E-040
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0358	ug/L	0.0358	0.108	1
11104-28-2	Aroclor-1221	U	0.0358	ug/L	0.0358	0.108	1
11141-16-5	Aroclor-1232	U	0.0358	ug/L	0.0358	0.108	1
53469-21-9	Aroclor-1242	U	0.0358	ug/L	0.0358	0.108	1
12672-29-6	Aroclor-1248	U	0.0358	ug/L	0.0358	0.108	1
11097-69-1	Aroclor-1254	U	0.0358	ug/L	0.0358	0.108	1
11096-82-5	Aroclor-1260	U	0.0358	ug/L	0.0358	0.108	1
37324-23-5	Aroclor-1262	U	0.0358	ug/L	0.0358	0.108	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.116	0.215	54	(33%-122%)
Decachlorobiphenyl	0.169	0.215	78	(35%-138%)

Quality Control Summary

PCB
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-2708**Matrix Type: LIQUID**

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203876046	MB for batch 1701040	65	72	87	96
1203876047	LCS for batch 1701040	69	76	87	97
432512007	CAWA-17-143059	62	69	89	100
1203877911	CAWA-17-143059MS	55	62	83	94
1203877912	CAWA-17-143059MSD	58	64	87	99
432512010	CAWA-17-143061	54	61	78	87

Surrogate**Acceptance Limits**

4CMX = 4cmx

(33%-122%)

DCB = Decachlorobiphenyl

(35%-138%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PCB
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-2708

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1701040

Matrix: WATER

Lab Sample ID 1203876047

Instrument: ECD8A.I

Analysis Date: 09/20/2017 08:04

Dilution: 1

Analyst: JXM

Prep Batch ID: 1701040

Inj. Vol: 1 uL

Batch ID: 1701042

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
12674-11-2	LCS Aroclor-1016	1.00	0.0	0.699	70	45-101
11096-82-5	LCS Aroclor-1260	1.00	0.0	0.755	75	52-113

PCB
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-2708

Sample Type: Matrix Spike

Client ID: CAWA-17-143059MS

Matrix: W

Lab Sample ID 1203877911

Instrument: ECD8A.I

Analysis Date: 09/20/2017 11:06

Dilution: 1

Analyst: JXM

Prep Batch ID: 1701040

Inj. Vol: 1 uL

Batch ID: 1701042

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
12674-11-2	MS Aroclor-1016	1.03	0.00 U	0.616	60	26-110
11096-82-5	MS Aroclor-1260	1.03	0.00 U	0.727	71	30-127

PCB
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-2708

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-143059MSD

Matrix: W

Lab Sample ID 1203877912

Instrument: ECD8A.I

Analysis Date: 09/20/2017 11:20

Dilution: 1

Analyst: JXM

Prep Batch ID: 1701040

Inj. Vol: 1 uL

Batch ID: 1701042

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
12674-11-2	MSD Aroclor-1016	1.03	0.00	U	0.670	65	26-110	8	0-27
11096-82-5	MSD Aroclor-1260	1.03	0.00	U	0.781	76	30-127	7	0-29

Method Blank Summary

Page 1 of 1

SDG Number:	2017-2708	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1701040	Instrument ID:	ECD8A.I_1	Data File:	092017.B\8i2013.D
Lab Sample ID:	1203876046		ECD8A.I_2		092017.B\8i2013.D
Column:	RTX-CLPEST1	Prep Date:	09/19/2017 17:00	Analyzed:	09/20/17 07:51
	RTX-CLPEST2				

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 1701040	1203876047	092017.B\8i2014.D	09/20/17	0804
02 CAWA-17-143059	432512007	092017.B\8i2026.D	09/20/17	1051
03 CAWA-17-143059MS	1203877911	092017.B\8i2027.D	09/20/17	1106
04 CAWA-17-143059MSD	1203877912	092017.B\8i2028.D	09/20/17	1120
05 CAWA-17-143061	432512010	092017.B\8i2029.D	09/20/17	1135

Quality Control Data

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708
Lab Sample ID: 1203876046
Client Sample: QC for batch 1701040
Client ID: MB for batch 1701040
Batch ID: 1701042
Run Date: 09/20/2017 07:51
Prep Date: 09/19/2017 17:00
Data File: 092017.B\8i2013.D
 092017.B\8i2013.D

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-040
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

Client: ARSL004
Method: SW846 3535A/8082
Inst: ECD8A.I
Analyst: JXM
Aliquot: 1000 mL
Column: 1 RTX-CLPEST1
 2 RTX-CLPEST2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016	U	0.0333	ug/L	0.0333	0.100	1
11104-28-2	Aroclor-1221	U	0.0333	ug/L	0.0333	0.100	1
11141-16-5	Aroclor-1232	U	0.0333	ug/L	0.0333	0.100	1
53469-21-9	Aroclor-1242	U	0.0333	ug/L	0.0333	0.100	1
12672-29-6	Aroclor-1248	U	0.0333	ug/L	0.0333	0.100	1
11097-69-1	Aroclor-1254	U	0.0333	ug/L	0.0333	0.100	1
11096-82-5	Aroclor-1260	U	0.0333	ug/L	0.0333	0.100	1
37324-23-5	Aroclor-1262	U	0.0333	ug/L	0.0333	0.100	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.131	0.200	65	(33%-122%)
Decachlorobiphenyl	0.174	0.200	87	(35%-138%)

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708
Lab Sample ID: 1203876047
Client Sample: QC for batch 1701040
Client ID: LCS for batch 1701040
Batch ID: 1701042
Run Date: 09/20/2017 08:04
Prep Date: 09/19/2017 17:00
Data File: 092017.B\8i2014.D
 092017.B\8i2014.D

Client: ARSL004
Method: SW846 3535A/8082
Inst: ECD8A.I
Analyst: JXM
Aliquot: 1000 mL
Column: 1 RTX-CLPEST1
 2 RTX-CLPEST2

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-040
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016		0.699	ug/L	0.0333	0.100	1
11104-28-2	Aroclor-1221	U	0.0333	ug/L	0.0333	0.100	1
11141-16-5	Aroclor-1232	U	0.0333	ug/L	0.0333	0.100	1
53469-21-9	Aroclor-1242	U	0.0333	ug/L	0.0333	0.100	1
12672-29-6	Aroclor-1248	U	0.0333	ug/L	0.0333	0.100	1
11097-69-1	Aroclor-1254	U	0.0333	ug/L	0.0333	0.100	1
11096-82-5	Aroclor-1260		0.755	ug/L	0.0333	0.100	1
37324-23-5	Aroclor-1262	U	0.0333	ug/L	0.0333	0.100	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.138	0.200	69	(33%-122%)
Decachlorobiphenyl	0.175	0.200	87	(35%-138%)

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203877911	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1701040	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MS	Method: SW846 3535A/8082	SOP Ref: GL-OA-E-040
Batch ID: 1701042	Inst: ECD8A.I	Dilution: 1
Run Date: 09/20/2017 11:06	Analyst: JXM	Inj. Vol: 1 uL
Prep Date: 09/19/2017 17:00	Aliquot: 970 mL	Final Volume: 1 mL
Data File: 092017.B\8i2027.D	Column: 1 RTX-CLPEST1	
092017.B\8i2027.D	2 RTX-CLPEST2	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016		0.616	ug/L	0.0343	0.103	1
11104-28-2	Aroclor-1221	U	0.0343	ug/L	0.0343	0.103	1
11141-16-5	Aroclor-1232	U	0.0343	ug/L	0.0343	0.103	1
53469-21-9	Aroclor-1242	U	0.0343	ug/L	0.0343	0.103	1
12672-29-6	Aroclor-1248	U	0.0343	ug/L	0.0343	0.103	1
11097-69-1	Aroclor-1254	U	0.0343	ug/L	0.0343	0.103	1
11096-82-5	Aroclor-1260		0.727	ug/L	0.0343	0.103	1
37324-23-5	Aroclor-1262	U	0.0343	ug/L	0.0343	0.103	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.114	0.206	55	(33%-122%)
Decachlorobiphenyl	0.170	0.206	83	(35%-138%)

PCB
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2017-2708	Date Collected: 09/06/2017 10:43	Matrix: W
Lab Sample ID: 1203877912	Date Received: 09/08/2017 09:20	
Client Sample: QC for batch 1701040	Client: ARSL004	Project: QC
Client ID: CAWA-17-143059MSD	Method: SW846 3535A/8082	SOP Ref: GL-OA-E-040
Batch ID: 1701042	Inst: ECD8A.I	Dilution: 1
Run Date: 09/20/2017 11:20	Analyst: JXM	Inj. Vol: 1 uL
Prep Date: 09/19/2017 17:00	Aliquot: 970 mL	Final Volume: 1 mL
Data File: 092017.B\8i2028.D	Column: 1 RTX-CLPEST1	
	2 RTX-CLPEST2	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
12674-11-2	Aroclor-1016		0.670	ug/L	0.0343	0.103	1
11104-28-2	Aroclor-1221	U	0.0343	ug/L	0.0343	0.103	1
11141-16-5	Aroclor-1232	U	0.0343	ug/L	0.0343	0.103	1
53469-21-9	Aroclor-1242	U	0.0343	ug/L	0.0343	0.103	1
12672-29-6	Aroclor-1248	U	0.0343	ug/L	0.0343	0.103	1
11097-69-1	Aroclor-1254	U	0.0343	ug/L	0.0343	0.103	1
11096-82-5	Aroclor-1260		0.781	ug/L	0.0343	0.103	1
37324-23-5	Aroclor-1262	U	0.0343	ug/L	0.0343	0.103	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.119	0.206	58	(33%-122%)
Decachlorobiphenyl	0.179	0.206	87	(35%-138%)

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512

Sample ID	Client ID
432512001	CAPA-17-142952
432512002	CAPA-17-142953
432512006	CAWA-17-143057
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203872729	Method Blank (MB) ICP
1203872730	Laboratory Control Sample (LCS)
1203872733	432512001(CAPA-17-142952L) Serial Dilution (SD)
1203872731	432512001(CAPA-17-142952D) Sample Duplicate (DUP)
1203872732	432512001(CAPA-17-142952S) Matrix Spike (MS)
1203872706	Method Blank (MB) ICP-MS
1203872707	Laboratory Control Sample (LCS)
1203872710	432512001(CAPA-17-142952L) Serial Dilution (SD)
1203872708	432512001(CAPA-17-142952D) Sample Duplicate (DUP)
1203872709	432512001(CAPA-17-142952S) Matrix Spike (MS)
1203878928	Method Blank (MB) CVAA
1203878929	Laboratory Control Sample (LCS)
1203878932	432507001(NonSDGL) Serial Dilution (SD)
1203878930	432507001(NonSDGD) Sample Duplicate (DUP)
1203878931	432507001(NonSDGS) Matrix Spike (MS)

Sample Analysis

Samples 432512001,002,006,009 and 012 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1699801, 1699792, 1702200 and 1706554
Prep Batch :	1699800, 1699791 and 1702198
Standard Operating Procedures:	GL-MA-E-013 REV# 29, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 31, GL-MA-E-010 REV# 35 and GL-GC-E-107 REV# 10
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

System Configuration

The Hardness as CaCO₃ is calculated from Calcium and Magnesium results.

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of zinc. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 432512001 (CAPA-17-142952), 432512002 (CAPA-17-142953), 432512006 (CAWA-17-143057) and 432512012 (CAWA-17-143061)-ICP.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria. For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Continuing Calibration Blanks (CCB) Requirements

All continuing calibration blanks (CCB) bracketing this batch met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements

All continuing calibration verifications (CCV) bracketing this SDG met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 432512001 (CAPA-17-142952)-ICP and ICP-MS and 432507001 (NonSDG)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration

is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. The relative percent differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Serial Dilution % Difference Statement

All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. 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. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were not diluted and were prepared according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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 will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Additional Comments

Total Hardness by Calculation is determined using the results of Total Calcium (Ca) and Total Magnesium (Mg) determined by ICP or ICP-MS.

$$\text{Hardness} = 2.497 (\text{Ca}) + 4.118 (\text{Mg})$$

Please refer to the Total Ca and Total Mg data to validate results appearing on the Hardness Summary sheet. Both results are in the Inorganic/metals section of the package. There is no Batch QC for calculated results, and thus no QC Summary for the Hardness by Calculation Batch. The MDLs and PQLs are calculated using the higher of the two calculated values of Ca or Mg.

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: 2017-2708 GEL Work Order: 432512

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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: Nik-Cole Elmore

Date: 05 OCT 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432512001**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAPA-17-142952**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	09/21/17 10:29	092117W1-5	1702200

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432512001

BASIS: As Received

DATE COLLECTED 06-SEP-17

CLIENT ID: CAPA-17-142952

LEVEL: Low

DATE RECEIVED 08-SEP-17

MATRIX: W

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	260	ug/L		68	200	200	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/29/17 22:42	170929-2	1699792
7440-38-2	Arsenic	2.81	ug/L	J	2	5	5	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-39-3	Barium	56.2	ug/L		1	5	5	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-70-2	Calcium	13900	ug/L		50	200	200	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	09/25/17 13:57	092517-1	1699801
7439-89-6	Iron	142	ug/L		30	100	100	1	P	HSC	09/25/17 13:57	092517-1	1699801
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7439-95-4	Magnesium	4110	ug/L		110	300	300	1	P	HSC	09/25/17 13:57	092517-1	1699801
7439-96-5	Manganese	6.16	ug/L	J	2	10	10	1	P	HSC	09/25/17 13:57	092517-1	1699801
7439-98-7	Molybdenum	0.923	ug/L		0.2	0.5	0.5	1	MS	BAJ	10/02/17 18:21	171002-4	1699792
7440-02-0	Nickel	1.9	ug/L	J	0.6	2	2	1	MS	BAJ	10/02/17 18:21	171002-4	1699792
7440-09-7	Potassium	3070	ug/L		50	150	150	1	P	HSC	09/25/17 13:57	092517-1	1699801
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7631-86-9	Silica	30500	ug/L		53	213	213	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-23-5	Sodium	14100	ug/L		100	300	300	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-24-6	Strontium	102	ug/L		1	5	5	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-61-1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	10/02/17 15:53	171002-3	1699792
7440-62-2	Vanadium	2.04	ug/L	J	1	5	5	1	P	HSC	09/25/17 13:57	092517-1	1699801
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	09/25/17 13:57	092517-1	1699801

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432512001**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAPA-17-142952**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	51.7	mg/L		0.453	1.24	1.24	1		TXT1	10/04/17 12:52		1706554

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1699792	1699791	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1699801	1699800	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1702200	1702198	EPA 245.1/245.2 Prep	20	mL	20	mL	09/20/17	AXS5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432512002**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAPA-17-142953**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	09/21/17 10:31	092117W1-5	1702200

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432512002

BASIS: As Received

DATE COLLECTED 06-SEP-17

CLIENT ID: CAPA-17-142953

LEVEL: Low

DATE RECEIVED 08-SEP-17

MATRIX: W

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	270	ug/L		68	200	200	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/29/17 22:47	170929-2	1699792
7440-38-2	Arsenic	3.17	ug/L	J	2	5	5	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-39-3	Barium	57.5	ug/L		1	5	5	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-70-2	Calcium	14300	ug/L		50	200	200	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	09/25/17 13:48	092517-1	1699801
7439-89-6	Iron	151	ug/L		30	100	100	1	P	HSC	09/25/17 13:48	092517-1	1699801
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7439-95-4	Magnesium	4210	ug/L		110	300	300	1	P	HSC	09/25/17 13:48	092517-1	1699801
7439-96-5	Manganese	6.45	ug/L	J	2	10	10	1	P	HSC	09/25/17 13:48	092517-1	1699801
7439-98-7	Molybdenum	0.847	ug/L		0.2	0.5	0.5	1	MS	BAJ	10/02/17 18:29	171002-4	1699792
7440-02-0	Nickel	1.79	ug/L	J	0.6	2	2	1	MS	BAJ	10/02/17 18:29	171002-4	1699792
7440-09-7	Potassium	3130	ug/L		50	150	150	1	P	HSC	09/25/17 13:48	092517-1	1699801
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-23-5	Sodium	14000	ug/L		100	300	300	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-24-6	Strontium	104	ug/L		1	5	5	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-61-1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	10/02/17 16:03	171002-3	1699792
7440-62-2	Vanadium	2.15	ug/L	J	1	5	5	1	P	HSC	09/25/17 13:48	092517-1	1699801
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	09/25/17 13:48	092517-1	1699801

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432512002**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAPA-17-142953**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	53	mg/L		0.453	1.24	1.24	1		TXT1	10/04/17 12:52		1706554

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1699792	1699791	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1699801	1699800	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1702200	1702198	EPA 245.1/245.2 Prep	20	mL	20	mL	09/20/17	AXS5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432512006**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAWA-17-143057**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	09/21/17 10:36	092117W1-5	1702200

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432512006

BASIS: As Received

DATE COLLECTED 06-SEP-17

CLIENT ID: CAWA-17-143057

LEVEL: Low

DATE RECEIVED 08-SEP-17

MATRIX: W

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	68	ug/L	U	68	200	200	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/29/17 22:49	170929-2	1699792
7440-38-2	Arsenic	2.32	ug/L	J	2	5	5	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-39-3	Barium	10.3	ug/L		1	5	5	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-70-2	Calcium	10300	ug/L		50	200	200	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	09/25/17 13:51	092517-1	1699801
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	09/25/17 13:51	092517-1	1699801
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7439-95-4	Magnesium	3160	ug/L		110	300	300	1	P	HSC	09/25/17 13:51	092517-1	1699801
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	09/25/17 13:51	092517-1	1699801
7439-98-7	Molybdenum	0.770	ug/L		0.2	0.5	0.5	1	MS	BAJ	10/02/17 18:31	171002-4	1699792
7440-02-0	Nickel	0.805	ug/L	J	0.6	2	2	1	MS	BAJ	10/02/17 18:31	171002-4	1699792
7440-09-7	Potassium	774	ug/L		50	150	150	1	P	HSC	09/25/17 13:51	092517-1	1699801
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7631-86-9	Silica	57100	ug/L		53	213	213	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-23-5	Sodium	9210	ug/L		100	300	300	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-24-6	Strontium	54.7	ug/L		1	5	5	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-61-1	Uranium	0.474	ug/L		0.067	0.2	0.2	1	MS	BAJ	10/02/17 16:05	171002-3	1699792
7440-62-2	Vanadium	1.94	ug/L	J	1	5	5	1	P	HSC	09/25/17 13:51	092517-1	1699801
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	09/25/17 13:51	092517-1	1699801

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432512006**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAWA-17-143057**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	38.7	mg/L		0.453	1.24	1.24	1		TXT1	10/04/17 12:52		1706554

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1699792	1699791	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1699801	1699800	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1702200	1702198	EPA 245.1/245.2 Prep	20	mL	20	mL	09/20/17	AXS5

Analytical Methods:*P** SW846 3005A/6010C**MS** SW846 3005A/6020A**AV** EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432512009**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAWA-17-143059**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	09/21/17 10:38	092117W1-5	1702200

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1702200	1702198	EPA 245.1/245.2 Prep	20	mL	20	mL	09/20/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432512012**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAWA-17-143061**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.067	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	09/21/17 10:39	092117W1-5	1702200

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432512012

BASIS: As Received

DATE COLLECTED 06-SEP-17

CLIENT ID: CAWA-17-143061

LEVEL: Low

DATE RECEIVED 08-SEP-17

MATRIX: W

%SOLIDS: 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	68	ug/L	U	68	200	200	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/29/17 22:50	170929-2	1699792
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-39-3	Barium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-70-2	Calcium	50	ug/L	U	50	200	200	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	HSC	09/25/17 13:54	092517-1	1699801
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	HSC	09/25/17 13:54	092517-1	1699801
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7439-95-4	Magnesium	110	ug/L	U	110	300	300	1	P	HSC	09/25/17 13:54	092517-1	1699801
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	09/25/17 13:54	092517-1	1699801
7439-98-7	Molybdenum	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	10/02/17 18:33	171002-4	1699792
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	10/02/17 18:33	171002-4	1699792
7440-09-7	Potassium	50	ug/L	U	50	150	150	1	P	HSC	09/25/17 13:54	092517-1	1699801
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7631-86-9	Silica	53	ug/L	U	53	213	213	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-23-5	Sodium	100	ug/L	U	100	300	300	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-24-6	Strontium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-61-1	Uranium	0.067	ug/L	U	0.067	0.2	0.2	1	MS	BAJ	10/02/17 16:08	171002-3	1699792
7440-62-2	Vanadium	1	ug/L	U	1	5	5	1	P	HSC	09/25/17 13:54	092517-1	1699801
7440-66-6	Zinc	3.3	ug/L	U	3.3	10	10	1	P	HSC	09/25/17 13:54	092517-1	1699801

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2708**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432512012**BASIS:** As Received**DATE COLLECTED** 06-SEP-17**CLIENT ID:** CAWA-17-143061**LEVEL:** Low**DATE RECEIVED** 08-SEP-17**MATRIX:** W**%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	0.453	mg/L	U	0.453	1.24	1.24	1		TXT1	10/04/17 12:52		1706554

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1699792	1699791	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1699801	1699800	SW846 3005A	50	mL	50	mL	09/12/17	JXM8
1702200	1702198	EPA 245.1/245.2 Prep	20	mL	20	mL	09/20/17	AXS5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2017-2708

Contract: ESHL00114

Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203872706	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	2	ug/L	+/-5	U	MS	2	5
	Cadmium	0.3	ug/L	+/-1	U	MS	0.3	1
	Chromium	3	ug/L	+/-10	U	MS	3	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Molybdenum	0.2	ug/L	+/-0.5	U	MS	0.2	0.5
	Nickel	0.6	ug/L	+/-2	U	MS	0.6	2
	Selenium	2	ug/L	+/-5	U	MS	2	5
	Silver	0.3	ug/L	+/-1	U	MS	0.3	1
	Thallium	0.6	ug/L	+/-2	U	MS	0.6	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1203872729	Aluminum	68	ug/L	+/-200	U	P	68	200
	Barium	1	ug/L	+/-5	U	P	1	5
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Calcium	50	ug/L	+/-200	U	P	50	200
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	118	ug/L	+/-300	J	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1203878928	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2

*Analytical Methods:

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-2708 Client ID: CAPA-17-142952S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 432512001 Spike ID: 1203872709

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	52.9		1	U	50	106		MS
Arsenic	ug/L	75-125	55.9		2.81	J	50	106		MS
Cadmium	ug/L	75-125	52.8		0.3	U	50	106		MS
Chromium	ug/L	75-125	56		3	U	50	110		MS
Lead	ug/L	75-125	55.1		0.5	U	50	110		MS
Molybdenum	ug/L	75-125	55.1		0.923		50	108		MS
Nickel	ug/L	75-125	56.4		1.9	J	50	109		MS
Selenium	ug/L	75-125	57.1		2	U	50	114		MS
Silver	ug/L	75-125	55.9		0.3	U	50	112		MS
Thallium	ug/L	75-125	55.5		0.6	U	50	111		MS
Uranium	ug/L	75-125	56.1		0.067	U	50	112		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-2708

Client ID: CAPA-17-142952S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 432512001

Spike ID: 1203872732

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	5090		260		5000	96.6		P
Barium	ug/L	75-125	531		56.2		500	94.9		P
Beryllium	ug/L	75-125	472		1	U	500	94.4		P
Boron	ug/L	75-125	513		15	U	500	99.8		P
Calcium	ug/L	75-125	19300		13900		5000	107		P
Cobalt	ug/L	75-125	480		1	U	500	96		P
Copper	ug/L	75-125	484		3	U	500	96.6		P
Iron	ug/L	75-125	5290		142		5000	103		P
Magnesium	ug/L	75-125	9190		4110		5000	102		P
Manganese	ug/L	75-125	469		6.16	J	500	92.6		P
Potassium	ug/L	75-125	7740		3070		5000	93.4		P
Silica	ug/L	75-125	41400		30500		10700	102		P
Sodium	ug/L	75-125	19800		14100		5000	114		P
Strontium	ug/L	75-125	610		102		500	102		P
Tin	ug/L	75-125	466		2.5	U	500	92.8		P
Vanadium	ug/L	75-125	476		2.04	J	500	94.8		P
Zinc	ug/L	75-125	446		3.3	U	500	88.8		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-2708

Client ID: WT_SIP-17-135650S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 432507001

Spike ID: 1203878931

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.16		0.067	U	2	105		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
–6–
Duplicate Sample Summary

SDG No.: 2017–2708

Lab Code: GEL

Contract: ESHL00114

Client ID: CAPA–17–142952D

Matrix: WATER

Level: Low

Sample ID: 432512001

Duplicate ID: 1203872708

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L		1 U		1 U				MS
Arsenic	ug/L	+/-5	2.81 J		2.84 J		.743		MS
Cadmium	ug/L		0.3 U		0.3 U				MS
Chromium	ug/L		3 U		3 U				MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	0.923		0.937		1.51		MS
Nickel	ug/L	+/-2	1.9 J		1.88 J		.688		MS
Selenium	ug/L		2 U		2 U				MS
Silver	ug/L		0.3 U		0.3 U				MS
Thallium	ug/L		0.6 U		0.6 U				MS
Uranium	ug/L		0.067 U		0.067 U				MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
–6–
Duplicate Sample Summary

SDG No.: 2017–2708

Lab Code: GEL

Contract: ESHL00114

Client ID: CAPA–17–142952D

Matrix: WATER

Level: Low

Sample ID: 432512001

Duplicate ID: 1203872731

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	260		302		15.1		P
Barium	ug/L	+/-20%	56.2		59.8		6.06		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15 U		15 U				P
Calcium	ug/L	+/-20%	13900		14700		5.68		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3 U		3 U				P
Iron	ug/L	+/-100	142		151		6.09		P
Magnesium	ug/L	+/-20%	4110		4370		6.18		P
Manganese	ug/L	+/-10	6.16 J		6.49 J		5.32		P
Potassium	ug/L	+/-20%	3070		3300		7.11		P
Silica	ug/L	+/-20%	30500		32300		5.6		P
Sodium	ug/L	+/-20%	14100		15000		5.76		P
Strontium	ug/L	+/-20%	102		108		6.53		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	2.04 J		2.33 J		13.4		P
Zinc	ug/L		3.3 U		3.3 U				P

*Analytical Methods:

P SW846 3005A/6010C

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-2708**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** WT_SIP-17-135650D**Matrix:** WATER**Level:** Low**Sample ID:** 432507001**Duplicate ID:** 1203878930**Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Mercury	ug/L		0.067	U	0.067	U			AV

*Analytical Methods:
AV EPA 245.1/245.2

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2017-2708

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203872707								
	Antimony	ug/L	50	51.1		102	80-120	MS
	Arsenic	ug/L	50	55.8		112	80-120	MS
	Cadmium	ug/L	50	59.7		119	80-120	MS
	Chromium	ug/L	50	57.3		115	80-120	MS
	Lead	ug/L	50	56.3		113	80-120	MS
	Molybdenum	ug/L	50	55.4		111	80-120	MS
	Nickel	ug/L	50	58.3		117	80-120	MS
	Selenium	ug/L	50	59.1		118	80-120	MS
	Silver	ug/L	50	58.6		117	80-120	MS
	Thallium	ug/L	50	55.5		111	80-120	MS
	Uranium	ug/L	50	56.5		113	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2017-2708

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203872730								
	Aluminum	ug/L	5000	4860		97.3	80-120	P
	Barium	ug/L	500	476		95.2	80-120	P
	Beryllium	ug/L	500	468		93.6	80-120	P
	Boron	ug/L	500	489		97.9	80-120	P
	Calcium	ug/L	5000	4880		97.6	80-120	P
	Cobalt	ug/L	500	488		97.6	80-120	P
	Copper	ug/L	500	484		96.7	80-120	P
	Iron	ug/L	5000	5170		103	80-120	P
	Magnesium	ug/L	5000	5020		100	80-120	P
	Manganese	ug/L	500	478		95.6	80-120	P
	Potassium	ug/L	5000	4660		93.1	80-120	P
	Silica	ug/L	10700	9760		91.1	80-120	P
	Sodium	ug/L	5000	5110		102	80-120	P
	Strontium	ug/L	500	503		101	80-120	P
	Tin	ug/L	500	464		92.8	80-120	P
	Vanadium	ug/L	500	476		95.1	80-120	P
	Zinc	ug/L	500	454		90.8	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2017-2708

Contract: ESHL00114

Aqueous LCS Source: GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203878929	Mercury	ug/L	2	2.08		104	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2017-2708

Client ID: CAPA-17-142952L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 432512001

Serial Dilution ID: 1203872710

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.81	J	10	U	97.406			MS
Cadmium	.3	U	1.5	U				MS
Chromium	3	U	15	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.923		1.17	J	26.761			MS
Nickel	1.9	J	3	U	12.869			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.067	U	.335	U				MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2017-2708

Client ID: CAPA-17-142952L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 432512001

Serial Dilution ID: 1203872733

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	260		340	U	22.77			P
Barium	56.2		56.3		.16		10	P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	13900		14100		1.559		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	142		164	J	16.081			P
Magnesium	4110		4200		2.232			P
Manganese	6.16	J	10	U	10.569			P
Potassium	3070		2900		5.487		10	P
Silica	30500		29900		1.941		10	P
Sodium	14100		14900		5.578		10	P
Strontium	102		102		.295		10	P
Tin	2.5	U	12.5	U				P
Vanadium	2.04	J	5	U	55.445			P
Zinc	3.3	U	22.6	J				P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 2017-2708 **Client ID:** WT_SIP-17-135650L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 432507001 **Serial Dilution ID:** 1203878932

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Mercury	.067	U	.335	U				AV

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1699918

Method: SW 9060 Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW-846:9060:

Sample ID	Client ID
432512002	CAPA-17-142953
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203873014	Method Blank (MB)
1203873015	Laboratory Control Sample (LCS)
1203873016	432325003(CAWA-17-142921) Sample Duplicate (DUP)
1203873018	432325003(CAWA-17-142921) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-093 REV# 15.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Carbon analysis was performed on a O-I Analytical 1030W Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325003 (CAWA-17-142921) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1698825	Method:	WSP-CN(T)
Prep Batch :	1698824	Method:	EPA 335.4

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 335.4 1993:

Sample ID	Client ID
432512002	CAPA-17-142953
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203870419	Method Blank (MB)
1203870420	Laboratory Control Sample (LCS)
1203870421	432185002(CAWA-17-142892) Sample Duplicate (DUP)
1203870422	432185002(CAWA-17-142892) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-095 REV# 20.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432185002 (CAWA-17-142892) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1700336 **Method:** WSP-ANIONS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:300.0:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203874284	Method Blank (MB)
1203874285	Laboratory Control Sample (LCS)
1203874286	432325001(CAWA-17-142886) Sample Duplicate (DUP)
1203874287	432325001(CAWA-17-142886) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-086 REV# 25.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-5000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following sample 432512001 (CAPA-17-142952) was diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	432512
	001
Chloride	5X

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Manual Integrations

Samples 1203874286 (CAWA-17-142886DUP), 1203874287 (CAWA-17-142886PS), 432512001 (CAPA-17-142952), 432512006 (CAWA-17-143057) and 432512012 (CAWA-17-143061) were manually integrated to correctly position the baseline as set in the calibration standards.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Ammonia Nitrogen
Analytical Batch: 1699978 **Method:** NH3
Prep Batch : 1699976 **Method:** EPA 350.1 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:350.1:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873242	Method Blank (MB)
1203873243	Laboratory Control Sample (LCS)
1203873246	432325001(CAWA-17-142886) Sample Duplicate (DUP)
1203873250	432325001(CAWA-17-142886) Matrix Spike (MS)
1203873252	432325001(CAWA-17-142886) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1699984	Method:	TKN
Prep Batch :	1699983	Method:	EPA 351.2 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:351.2:

Sample ID	Client ID
432512002	CAPA-17-142953
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203873268	Method Blank (MB)
1203873269	Laboratory Control Sample (LCS)
1203873270	432325003(CAWA-17-142921) Sample Duplicate (DUP)
1203873273	432325003(CAWA-17-142921) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-104 REV# 14.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325003 (CAWA-17-142921) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Sample1203873269 (LCS) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1700075

Method: NO3NO2

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:353.2:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873614	Method Blank (MB)
1203873615	Laboratory Control Sample (LCS)
1203873616	432318001(CTUA-17-142752) Sample Duplicate (DUP)
1203873620	432318001(CTUA-17-142752) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-128 REV# 9.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8500 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within

acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432318001 (CTUA-17-142752) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1699982	Method:	PO4
Prep Batch :	1699979	Method:	EPA 365.4 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 365.4 1974:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873257	Method Blank (MB)
1203873258	Laboratory Control Sample (LCS)
1203873260	432325001(CAWA-17-142886) Sample Duplicate (DUP)
1203873262	432325001(CAWA-17-142886) Matrix Spike (MS)
1203873263	432325001(CAWA-17-142886) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-103 REV# 10.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within

acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Sample1203873257 (MB) was re-analyzed due to instrument failure. The results from the reanalysis are reported.

Miscellaneous Information

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Solids and Total Dissolved

Analytical Batch: 1700092

Method: TDS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:160.1:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873721	Method Blank (MB)
1203873722	Laboratory Control Sample (LCS)
1203873723	432512001(CAPA-17-142952) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-001 REV# 15.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Solids analysis was performed on a Sartorius Balance BAL216. Solids lab

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Consecutive Weight Checks

All consecutive weight checks were met.

Quality Control (QC) Designation

Sample 432512001 (CAPA-17-142952) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample:

Analyte	Sample	Value
Total Dissolved Solids	1203873723 (CAPA-17-142952DUP)	71.4* (0%-5%)

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Specific Conductivity

Analytical Batch: 1703142

Method: EPA120.1 Specific Conductivity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:120.1:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203881177	Laboratory Control Sample (LCS)
1203881179	432325001(CAWA-17-142886) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-009 REV# 14.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Calibration Verification Information

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

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432325001 (CAWA-17-142886) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: pH

Analytical Batch: 1699927 **Method:** PH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 150.1 1982:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873073	Laboratory Control Sample (LCS)
1203873074	432546001(CrIN1-17-145287) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-008 REV# 22.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432546001 (CrIN1-17-145287) was selected for QC analysis.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203873074 (CrIN1-17-145287DUP)	pH	Received 08-SEP-17, out of holding 06-SEP-17
432512001 (CAPA-17-142952)	pH	Received 08-SEP-17, out of holding 06-SEP-17
432512006 (CAWA-17-143057)	pH	Received 08-SEP-17, out of holding 06-SEP-17
432512012 (CAWA-17-143061)	pH	Received 08-SEP-17, out of holding 06-SEP-17

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

Method/Analysis Information

Product: Alkalinity

Analytical Batch: 1699923 **Method:** EPA 310.1 Total Alkalinity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:310.1:

Sample ID	Client ID
432512001	CAPA-17-142952
432512006	CAWA-17-143057
432512012	CAWA-17-143061
1203873067	Laboratory Control Sample (LCS)
1203873070	432546001(CrIN1-17-145287) Sample Duplicate (DUP)
1203873072	432546001(CrIN1-17-145287) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-GC-E-033 REV# 13.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a Electronic bottle-top buret.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 432546001 (CrIN1-17-145287) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to 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. 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.

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: 2017-2708 GEL Work Order: 432512


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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: Aubrey Kingsbury

Date: 29 SEP 2017

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAPA-17-142952
Sample ID: 432512001
Matrix: W
Collect Date: 06-SEP-17 10:56
Receive Date: 08-SEP-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	09/15/17	0053	1700336	1
Fluoride	J	0.0871	0.033	0.100	mg/L		1					
Sulfate		4.88	0.133	0.400	mg/L		1					
Chloride		18.7	0.335	1.00	mg/L		5	MXL2	09/15/17	1908	1700336	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.121	0.017	0.050	mg/L	1.00	1	KLP1	09/13/17	1111	1699978	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	J	0.0418	0.017	0.050	mg/L		1	KLP1	09/13/17	1141	1700075	4
PO4 "As Received"												
Phosphorus, Total as P		0.192	0.020	0.050	mg/L	1.00	1	KLP1	09/13/17	1426	1699982	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		266	3.40	14.3	mg/L			KLP1	09/13/17	1407	1700092	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		56.5	1.45	4.00	mg/L			RXB5	09/13/17	1615	1699923	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		225	1.00	1.00	umhos/cm		1	VH1	09/28/17	1107	1703142	8
PH "As Received"												
pH at Temp 18.1C	H	7.68	0.010	0.100	SU		1	RXB5	09/13/17	1617	1699927	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	09/13/17	0803	1699976
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/13/17	1300	1699979

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAPA-17-142952
Sample ID: 432512001

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description					Analyst Comments						
1	EPA:300.0											
2	EPA:300.0											
3	EPA:350.1											
4	EPA:353.2											
5	EPA 365.4 1974											
6	EPA:160.1											
7	EPA:310.1											
8	EPA:120.1											
9	EPA 150.1 1982											

Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Client SDG: 2017-2708

Project: LANL- WQH Water Samples

Client Sample ID: CAPA-17-142953

Project: ESHL00114

Sample ID: 432512002

Client ID: ARSL004

Matrix: W

Collect Date: 06-SEP-17 10:56

Receive Date: 08-SEP-17

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average		2.73	0.330	1.00	mg/L		1	TSM	09/16/17	0203	1699918	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/15/17	0735	1698825	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.138	0.033	0.100	mg/L	1.00	1	KLP1	09/14/17	1026	1699984	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/14/17	0927	1698824
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	09/13/17	1300	1699983

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor

Lc/LC: Critical Level

DL: Detection Limit

PF: Prep Factor

MDA: Minimum Detectable Activity

RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAWA-17-143057
Sample ID: 432512006
Matrix: W
Collect Date: 06-SEP-17 10:43
Receive Date: 08-SEP-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	09/15/17	0122	1700336	1
Chloride		1.41	0.067	0.200	mg/L		1					
Fluoride	J	0.0433	0.033	0.100	mg/L		1					
Sulfate		2.75	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0587	0.017	0.050	mg/L	1.00	1	KLP1	09/13/17	1112	1699978	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.675	0.017	0.050	mg/L		1	KLP1	09/13/17	1142	1700075	3
PO4 "As Received"												
Phosphorus, Total as P		0.143	0.020	0.050	mg/L	1.00	1	KLP1	09/13/17	1426	1699982	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		98.6	3.40	14.3	mg/L			KLP1	09/13/17	1407	1700092	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		52.9	1.45	4.00	mg/L			RXB5	09/13/17	1622	1699923	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		138	1.00	1.00	umhos/cm		1	VH1	09/28/17	1107	1703142	7
PH "As Received"												
pH at Temp 18.0C	H	7.75	0.010	0.100	SU		1	RXB5	09/13/17	1618	1699927	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	AXH3	09/13/17	0803	1699976
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/13/17	1300	1699979

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAWA-17-143057
Sample ID: 432512006

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description					Analyst Comments						
1	EPA:300.0											
2	EPA:350.1											
3	EPA:353.2											
4	EPA 365.4 1974											
5	EPA:160.1											
6	EPA:310.1											
7	EPA:120.1											
8	EPA 150.1 1982											

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Client SDG: 2017-2708

Project: LANL- WQH Water Samples

Client Sample ID: CAWA-17-143059

Project: ESHL00114

Sample ID: 432512009

Client ID: ARSL004

Matrix: W

Collect Date: 06-SEP-17 10:43

Receive Date: 08-SEP-17

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.393	0.330	1.00	mg/L		1	TSM	09/16/17	0250	1699918	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/15/17	0736	1698825	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	09/14/17	1026	1699984	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/14/17	0927	1698824
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	09/13/17	1300	1699983

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAWA-17-143061
Sample ID: 432512012
Matrix: W
Collect Date: 06-SEP-17 08:15
Receive Date: 08-SEP-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L		1	TSM	09/16/17	0337	1699918	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/15/17	0737	1698825	2
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	09/15/17	0249	1700336	3
Chloride	J	0.0899	0.067	0.200	mg/L		1					
Fluoride	U	ND	0.033	0.100	mg/L		1					
Sulfate	U	ND	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0769	0.017	0.050	mg/L	1.00	1	KLP1	09/13/17	1113	1699978	4
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite	J	0.0453	0.017	0.050	mg/L		1	KLP1	09/13/17	1143	1700075	5
PO4 "As Received"												
Phosphorus, Total as P		0.104	0.020	0.050	mg/L	1.00	1	KLP1	09/13/17	1427	1699982	6
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	09/14/17	1027	1699984	7
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids	U	ND	3.40	14.3	mg/L			KLP1	09/13/17	1407	1700092	8
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3	U	ND	1.45	4.00	mg/L			RXB5	09/13/17	1623	1699923	9
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		1.32	1.00	1.00	umhos/cm		1	VH1	09/28/17	1107	1703142	10
PH "As Received"												
pH at Temp 18.2C	H	6.19	0.010	0.100	SU		1	RXB5	09/13/17	1620	1699927	11

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
--------	-------------	---------	------	------	------------

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: September 29, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545
Contact: Ms. Nita Patel
Project: LANL- WQH Water Samples

Client SDG: 2017-2708

Client Sample ID: CAWA-17-143061
Sample ID: 432512012

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
EPA 335.4	EPA 335.4	Total Cyanide		AXH3	09/14/17		0927		1698824			
EPA 350.1 Prep	EPA 350.1	Ammonia Nitrogen Prep		AXH3	09/13/17		0803		1699976			
EPA 351.2 Prep	EPA 351.2	Total Kjeldahl Nitrogen Prep		KLP1	09/13/17		1300		1699983			
EPA 365.4 Prep	EPA 365.4	Phosphorus, Total in liquid PR		KLP1	09/13/17		1300		1699979			

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	SW-846:9060		
2	EPA 335.4 1993		
3	EPA:300.0		
4	EPA:350.1		
5	EPA:353.2		
6	EPA 365.4 1974		
7	EPA:351.2		
8	EPA:160.1		
9	EPA:310.1		
10	EPA:120.1		
11	EPA 150.1 1982		

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 29, 2017

Page 1 of 6

Los Alamos National Laboratory
TA-00, SM1237, Rm104C
Los Alamos, New Mexico

Contact: Ms. Nita Patel

Workorder: 432512

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1699918										
QC1203873016	432325003	DUP									
Total Organic Carbon Average		U	ND	U	ND	mg/L	N/A		TSM	09/15/17	23:19
QC1203873015	LCS										
Total Organic Carbon Average	10.0				9.90	mg/L	99	(80%-120%)		09/15/17	10:13
QC1203873014	MB										
Total Organic Carbon Average			U		ND	mg/L				09/15/17	10:01
QC1203873018	432325003	PS									
Total Organic Carbon Average	10.0	U	ND		10.5	mg/L	103	(75%-125%)		09/16/17	00:06
Flow Injection Analysis											
Batch	1698825										
QC1203870421	432185002	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	09/15/17	07:04
QC1203870420	LCS										
Cyanide, Total	50.0				53.1	ug/L	106	(90%-110%)		09/15/17	07:02
QC1203870419	MB										
Cyanide, Total			U		ND	ug/L				09/15/17	07:01
QC1203870422	432185002	MS									
Cyanide, Total	100	U	ND		108	ug/L	108	(90%-110%)		09/15/17	07:05
Ion Chromatography											
Batch	1700336										
QC1203874286	432325001	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MXL2	09/14/17	22:29

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1700336										
Chloride		1.66		1.64	mg/L	1.06		(0%-20%)	MXL2	09/14/17	22:29
Fluoride		0.112		0.109	mg/L	2.9	^	(+/-0.100)			
Sulfate		4.43		4.42	mg/L	0.296		(0%-20%)			
QC1203874285 LCS											
Bromide	1.25			1.27	mg/L		102	(80%-120%)		09/14/17	21:31
Chloride	5.00			4.76	mg/L		95.1	(80%-120%)			
Fluoride	2.50			2.47	mg/L		98.9	(80%-120%)			
Sulfate	10.0			9.73	mg/L		97.3	(80%-120%)			
QC1203874284 MB											
Bromide			U	ND	mg/L					09/14/17	21:02
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1203874287 432325001 PS											
Bromide	1.25	U	ND	1.24	mg/L		96.2	(75%-125%)		09/14/17	22:58
Chloride	5.00		1.66	6.43	mg/L		95.5	(75%-125%)			
Fluoride	2.50		0.112	2.48	mg/L		94.9	(75%-125%)			
Sulfate	10.0		4.43	14.3	mg/L		98.8	(75%-125%)			

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1699978										
QC1203873246	432325001	DUP									
Nitrogen, Ammonia		J	0.0214	J	0.0208	mg/L	2.84 ^	(+/-0.050)	KLP1	09/13/17	10:48
QC1203873243	LCS										
Nitrogen, Ammonia	1.00				1.02	mg/L		102	(90%-110%)		09/13/17 10:46
QC1203873242	MB										
Nitrogen, Ammonia			J	0.0304	mg/L						09/13/17 10:45
QC1203873250	432325001	MS									
Nitrogen, Ammonia	1.00	J	0.0214		0.960	mg/L		93.9	(90%-110%)		09/13/17 10:49
QC1203873252	432325001	MSD									
Nitrogen, Ammonia	1.00	J	0.0214		0.979	mg/L	1.96	95.8	(0%-15%)		09/13/17 10:50
Batch	1699982										
QC1203873260	432325001	DUP									
Phosphorus, Total as P			0.0966		0.0909	mg/L	6.08 ^	(+/-0.050)	KLP1	09/13/17	14:15
QC1203873258	LCS										
Phosphorus, Total as P	1.00				1.10	mg/L		110	(80%-124%)		09/13/17 14:10
QC1203873257	MB										
Phosphorus, Total as P			U	ND	mg/L						09/13/17 14:35
QC1203873262	432325001	MS									
Phosphorus, Total as P	1.00		0.0966		1.11	mg/L		101	(63%-139%)		09/13/17 14:16
QC1203873263	432325001	MSD									
Phosphorus, Total as P	1.00		0.0966		1.12	mg/L	0.897	102	(0%-20%)		09/13/17 14:17
Batch	1699984										
QC1203873270	432325003	DUP									
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	09/14/17	10:13

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 4 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1699984										
QC1203873269	LCS										
Nitrogen, Total Kjeldahl	1.00			1.03	mg/L		103	(90%-110%)	KLP1	09/14/17	10:37
QC1203873268	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					09/14/17	10:11
QC1203873273	432325003	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	1.10	mg/L		110	(90%-110%)		09/14/17	10:14
<hr/>											
Batch	1700075										
QC1203873616	432318001	DUP									
Nitrogen, Nitrate/Nitrite			0.0558	0.0553	mg/L	0.9 ^		(+/-0.050)	KLP1	09/13/17	11:16
QC1203873615	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.999	mg/L		99.9	(90%-110%)		09/13/17	11:09
QC1203873614	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					09/13/17	11:07
QC1203873620	432318001	PS									
Nitrogen, Nitrate/Nitrite	1.00		0.0558	1.11	mg/L		105	(90%-110%)		09/13/17	11:17
<hr/>											
Solids Analysis											
Batch	1700092										
QC1203873723	432512001	DUP									
Total Dissolved Solids			266	129	mg/L	71.4*		(0%-5%)	KLP1	09/13/17	14:07
QC1203873722	LCS										
Total Dissolved Solids	300			303	mg/L		101	(95%-105%)		09/13/17	14:07
QC1203873721	MB										
Total Dissolved Solids			U	ND	mg/L					09/13/17	14:07

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 5 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1699923										
QC1203873070	432546001	DUP									
Alkalinity, Total as CaCO3		75.0		73.3	mg/L	2.42		(0%-20%)	RXB5	09/13/17	16:28
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203873067	LCS										
Alkalinity, Total as CaCO3	100			106	mg/L		106	(90%-110%)		09/13/17	15:33
QC1203873072	432546001	MS									
Alkalinity, Total as CaCO3	100	75.0		178	mg/L		103	(80%-120%)		09/13/17	16:29
Batch	1699927										
QC1203873074	432546001	DUP									
pH	H	8.12	H	8.12	SU	0		(0%-5%)	RXB5	09/13/17	16:27
QC1203873073	LCS										
pH	7.00			7.02	SU		100	(99%-101%)		09/13/17	16:04
Batch	1703142										
QC1203881179	432325001	DUP									
Conductivity		162		159	umhos/cm	2.18		(0%-10%)	VH1	09/28/17	11:06
QC1203881177	LCS										
Conductivity	1410			1410	umhos/cm		99.7	(95%-105%)		09/28/17	11:00

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 6 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
ND	Analyte concentration is not detected above the detection limit										
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.										
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.										
d	5-day BOD--The 2:1 depletion requirement was not met for this sample										
e	5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes										
h	Preparation or preservation holding time was exceeded										

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

**Radiochemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2708
Work Order #: 432512**

Method/Analysis Information

Product: Alphaspec Am241 Liquid

Analytical Method: HASL-300:AM-241

Analytical Batch Number: 1699914

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203872995	Method Blank (MB)
1203872997	Laboratory Control Sample (LCS)
1203872996	432512009(CAWA-17-143059) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-011 REV# 26.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibration was performed in September 2017.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203872995 (MB) and 1203872997 (LCS) were changed to 1.0, and the MDCs (and Lc if requested) for all samples are calculated using a blank population per client request.

Method Blank Criteria

The Method Blank (MB) met acceptance criteria.

CSU

The blank result is less than 1.65 times the CSU.

Blank Decision Level

The blank result is less than the decision level.

Tracer/Carrier Yield

Sample (See Below) did not meet the client's yield requirement. However, there are 400 tracer counts, GEL's standard tracer yield requirements are met, and the client's detection limits are met.

Sample	Analyte	Value
1203872996 (CAWA-17-143059DUP)	Americium-243 Tracer	42.1 * (50%-105%)

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Designated QC

The following sample was used for QC: 432512009 (CAWA-17-143059). The QC was from ARSL work order 432512.

Duplication Criteria between QC Sample and Duplicate Sample

The QC Sample and Duplicate Sample (DUP) met the duplication acceptance criteria.

RDL Met

The method RDL has been met.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 1203872996 (CAWA-17-143059DUP) was recounted due to low carrier/tracer yield. The recount is reported.

Miscellaneous Information:

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: ISOPU
Analytical Method: HASL-300:ISOPU
Analytical Batch Number: 1699915

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203873004	Method Blank (MB)
1203873006	Laboratory Control Sample (LCS)
1203873005	432512009(CAWA-17-143059) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-011 REV# 26.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibration was performed in September 2017.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203873004 (MB) and 1203873006 (LCS) were changed to 1.0, and the MDCs (and Lc if requested) for all samples are calculated using a blank population per client request.

Method Blank Criteria

The Method Blank (MB) met acceptance criteria.

CSU

The blank result is less than 1.65 times the CSU.

Blank Decision Level

The blank result is less than the decision level.

Tracer/Carrier Yield

Sample (See Below) did not meet the client's yield requirement. However, there are 400 tracer counts, GEL's standard tracer yield requirements are met, and the client's detection limits are met.

Sample	Analyte	Value
1203873005 (CAWA-17-143059DUP)	Plutonium-242 Tracer	45* (50%-105%)

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Designated QC

The following sample was used for QC: 432512009 (CAWA-17-143059). The QC was from ARSL work order 432512.

Duplication Criteria between QC Sample and Duplicate Sample

The QC Sample and Duplicate Sample (DUP) met the duplication acceptance criteria.

RDL Met

Sample (See Below) did not meet the detection limit due to the high standard deviation. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The sample was counted the maximum count time of in order to achieve the lowest possible MDAs.

Sample	Analyte	Value
432512009 (CAWA-17-143059)	Plutonium-239/240	Result 0.015 < MDA 0.0564 > RDL 0.05 pCi/L

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Sample 1203873005 (CAWA-17-143059DUP) was recounted due to low carrier/tracer yield. The recount is reported.

Miscellaneous Information:

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Sample 1203873005 (CAWA-17-143059DUP) did not meet the resolution requirement of having a full width half maximum of 100 keV or less for the tracer; however, the tracer yield requirement was met and the tracer peak is within the tracer region of interest.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: IsoU
Analytical Method: HASL-300:ISOU
Analytical Batch Number: 1706340

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203888613	Method Blank (MB)
1203888615	Laboratory Control Sample (LCS)
1203888614	432507001(NonSDG) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-011 REV# 26.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibrations were performed in October 2017 and September 2017.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203888613 (MB) and 1203888615 (LCS) were changed to 1.0, and the MDCs (and Lc if requested) for all samples are calculated using a blank population per client request.

Method Blank Criteria

The Method Blank (MB) met acceptance criteria.

CSU

The U-233/234, U-235/236, and U-238 blank result is greater than 1.65 times the CSU but less than the MDC.

Blank Decision Level

The U-233/234 blank result is greater than the decision level but less than the MDC.

Tracer/Carrier Yield

All yields met the required acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Designated QC

The following sample was used for QC: 432507001 (NonSDG). The QC was from ARSL work order 432507.

Duplication Criteria between QC Sample and Duplicate Sample

The QC Sample and Duplicate Sample (DUP) met the duplication acceptance criteria.

RDL Met

The method RDL has been met.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

Samples were re-prepped due to high blank activity. The re-analysis is being reported.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: **Gammascpec**

Analytical Method: EPA:901.1

Analytical Batch Number: 1701094

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203876224	Method Blank (MB)
1203876226	Laboratory Control Sample (LCS)
1203876225	432512009(CAWA-17-143059) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-013 REV# 27.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in January 2017, July 2017, June 2017 and October 2016.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Method Blank Criteria

The Method Blank (MB) met acceptance criteria.

CSU

The blank result is less than 1.65 times the CSU.

Blank Decision Level

The blank result is less than the decision level.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Designated QC

The following sample was used for QC: 432512009 (CAWA-17-143059). The QC was from ARSL work order 432512.

Duplication Criteria between QC Sample and Duplicate Sample

The QC Sample and Duplicate Sample (DUP) met the duplication acceptance criteria.

RDL Met

The method RDL has been met.

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**Sample-Specific MDA/MDC**

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
UI	Results are considered a false positive due to high counting uncertainty.	Potassium-40	432512009	CAWA-17-143059

Method/Analysis Information

Product:	WSP-GrossA/B
Analytical Method:	EPA 900.0/SW846 9310
Analytical Batch Number:	1701372

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203876911	Method Blank (MB)
1203876915	Laboratory Control Sample (LCS)
1203876912	432512009(CAWA-17-143059) Sample Duplicate (DUP)
1203876913	432512009(CAWA-17-143059) Matrix Spike (MS)
1203876914	432512009(CAWA-17-143059) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-001 REV# 19.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in December 2016.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

QC Information

All of the QC samples met the required acceptance limits.

Blank Information

Aliquots for samples 1203876911 (MB) and 1203876915 (LCS) were changed to 1.0 per client request.

CSU

The blank, 1203876911 (MB), beta result is greater than 1.65 times the CSU but less than the MDC.

Blank Decision Level

The blank, 1203876911 (MB), alpha and beta results are greater than the decision level but less than the MDC.

Tracer/Carrier Yield

All yields met the required acceptance limits.

Designated QC

The following sample was used for QC: 432512009 (CAWA-17-143059). The QC was from ARSL work order 432512.

RDL Met

The method RDL has been met.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating, especially to a dull red heat. For this sample set, the prepared planchet was counted for beta activity before being flamed. After flaming, the planchet was counted for

alpha activity.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GFPC, Sr90, liquid

Analytical Method: EPA:905.0

Analytical Batch Number: 1701506

Sample ID	Client ID
432512009	CAWA-17-143059
432512012	CAWA-17-143061
1203877336	Method Blank (MB)
1203877339	Laboratory Control Sample (LCS)
1203877337	432512012(CAWA-17-143061) Sample Duplicate (DUP)
1203877338	432512012(CAWA-17-143061) Matrix Spike (MS)

The samples in this SDG were analyzed on an "as received" basis.

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-RAD-A-004 REV# 18.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in April 2016.

Standards Information

Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:**Blank Information**

Aliquots for samples 1203877336 (MB) and 1203877339 (LCS) were changed to 1.0 per client request.

Method Blank Criteria

The Method Blank (MB) met acceptance criteria.

CSU

The blank result is less than 1.65 times the CSU.

Blank Decision Level

The blank result is less than the decision level.

Tracer/Carrier Yield

All yields met the required acceptance limits.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Designated QC

The following sample was used for QC: 432512012 (CAWA-17-143061). The QC was from ARSL work order 432512.

Matrix Spike (MS) Recovery

The MS spike recoveries met acceptance limits.

Duplication Criteria between QC Sample and Duplicate Sample

The QC Sample and Duplicate Sample (DUP) met the duplication acceptance criteria.

RDL Met

The method RDL has been met.

Technical Information:**Holding Time**

All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

Samples 1203877338 (CAWA-17-143061MS) and 1203877339 (LCS) were recounted due to low recovery. The recounts are reported. Sample 1203877336 (MB) was recounted due to a suspected blank false positive. The recount is reported. Sample 1203877337 (CAWA-17-143061DUP) was recounted due to a suspected false positive. The recount is reported.

Miscellaneous Information:**Sample-Specific MDA/MDC**

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike, 1203877338 (CAWA-17-143061MS), aliquot was reduced to conserve sample volume.

Qualifier Information

Manual qualifiers were not required.

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: 2017-2708 GEL Work Order: 432512


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification

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: Theresa Austin

Date: 06 OCT 2017

Title: Group Leader

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Project: LANL- WQH Water Samples

Report Date: October 6, 2017

Client Sample ID: CAWA-17-143059
Sample ID: 432512009
Matrix: W
Collect Date: 06-SEP-17
Receive Date: 08-SEP-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
-----------	-----------	--------	-------------	-----	----	-----	----	-------	----	----	---------	------	------	-------	------

Rad Alpha Spec Analysis

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.0181	+/-0.027	0.053	0.0224	+/-0.0271	0.050	pCi/L			BXA4	09/30/17	1706	1699914	1
<i>ISOPU "As Received"</i>															
Plutonium-238	U	-0.00251	+/-0.00561	0.0435	0.0183	+/-0.00561	0.050	pCi/L			BXA4	09/30/17	1706	1699915	2
Plutonium-239/240	U	0.015	+/-0.00938	0.0564	0.0248	+/-0.00942	0.050	pCi/L							
<i>IsoU "As Received"</i>															
Uranium-234		0.382	+/-0.0366	0.0696	0.0304	+/-0.0416	1.00	pCi/L			MXS2	10/05/17	1313	1706340	3
Uranium-235/236	U	0.0569	+/-0.0172	0.0741	0.0315	+/-0.0175	1.00	pCi/L							
Uranium-238		0.276	+/-0.0312	0.0673	0.0292	+/-0.0343	0.500	pCi/L							

Rad Gamma Spec Analysis

Gammasespec "As Received"

Cesium-137	U	-0.242	+/-1.28	4.73	2.03	+/-1.28	8.00	pCi/L			MXR1	09/26/17	0916	1701094	4
Cobalt-60	U	-0.666	+/-1.38	5.38	2.19	+/-1.39	8.00	pCi/L							
Neptunium-237	U	-2.02	+/-2.37	8.35	3.74	+/-2.41		pCi/L							
Potassium-40	UI	55.2	+/-28.6	43.3	16.6	+/-28.8		pCi/L							
Sodium-22	U	-1.84	+/-1.38	4.57	1.79	+/-1.44		pCi/L							

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	-0.0021	+/-0.129	0.481	0.213	+/-0.129	0.500	pCi/L			BXF1	09/26/17	1559	1701506	5
<i>WSP-GrossA/B "As Received"</i>															
Beta		1.80	+/-0.423	1.34	0.652	+/-0.451	3.00	pCi/L			BXG2	09/19/17	1730	1701372	6
Alpha	U	0.887	+/-0.778	2.70	0.994	+/-0.783	3.00	pCi/L			BXG2	09/20/17	1105	1701372	7

The following Analytical Methods were performed

Method	Description
1	HASL-300:AM-241
2	HASL-300:ISOPU
3	HASL-300:ISOU
4	EPA:901.1
5	EPA:905.0
6	EPA 900.0/SW846 9310
7	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1699914	67	(50%-105%)
Plutonium-242 Tracer	ISOPU "As Received"	1699915	66.5	(50%-105%)
Uranium-232 Tracer	IsoU "As Received"	1706340	66.4	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Project: LANL- WQH Water Samples

Client Sample ID: CAWA-17-143059

Sample ID: 432512009

Report Date: October 6, 2017

Project: ESHL00114

Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test								Batch ID	Recovery%	Acceptable Limits				
Strontium Carrier		GFPC, Sr90, liquid "As Received"							1701506	101	(50%-105%)				

Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Project: LANL- WQH Water Samples

Client Sample ID: CAWA-17-143061

Sample ID: 432512012

Matrix: W

Collect Date: 06-SEP-17

Receive Date: 08-SEP-17

Collector: Client

Report Date: October 6, 2017

Project: ESHL00114

Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis															
<i>Alphaspec Am241 Liquid "As Received"</i>															
Americium-241	U	0.00984	+/-0.00778	0.0431	0.0182	+/-0.00779	0.050	pCi/L			BXA4	09/30/17	1706	1699914	1
<i>ISOPU "As Received"</i>															
Plutonium-238	U	-4.34E-09	+/-0.0111	0.0376	0.0159	+/-0.0111	0.050	pCi/L			BXA4	09/30/17	1706	1699915	2
Plutonium-239/240	U	-2.89E-09	+/-0.0092	0.0487	0.0214	+/-0.0092	0.050	pCi/L							
<i>IsoU "As Received"</i>															
Uranium-234	U	0.0755	+/-0.0203	0.0875	0.0379	+/-0.0207	1.00	pCi/L			MXS2	10/04/17	2352	1706340	3
Uranium-235/236	U	0.00647	+/-0.0111	0.0933	0.0394	+/-0.0111	1.00	pCi/L							
Uranium-238	U	0.0287	+/-0.0153	0.0847	0.0365	+/-0.0154	0.500	pCi/L							
Rad Gamma Spec Analysis															
<i>Gammasespec "As Received"</i>															
Cesium-137	U	1.98	+/-1.22	5.31	2.34	+/-1.30	8.00	pCi/L			MXR1	09/26/17	0916	1701094	4
Cobalt-60	U	0.199	+/-1.79	6.78	2.91	+/-1.79	8.00	pCi/L							
Neptunium-237	U	0.483	+/-2.51	9.27	4.22	+/-2.51		pCi/L							
Potassium-40	U	-18.1	+/-18.4	64.4	27.5	+/-18.9		pCi/L							
Sodium-22	U	-1.16	+/-1.51	5.31	2.19	+/-1.53		pCi/L							
Rad Gas Flow Proportional Counting															
<i>GFPC, Sr90, liquid "As Received"</i>															
Strontium-90	U	0.483	+/-0.158	0.493	0.228	+/-0.163	0.500	pCi/L			BXF1	09/27/17	0904	1701506	5
<i>WSP-GrossA/B "As Received"</i>															
Beta		1.70	+/-0.373	1.17	0.567	+/-0.399	3.00	pCi/L			BXG2	09/19/17	1730	1701372	6
Alpha	U	0.241	+/-0.468	1.92	0.688	+/-0.469	3.00	pCi/L			BXG2	09/20/17	1105	1701372	7

The following Analytical Methods were performed

Method	Description
1	HASL-300:AM-241
2	HASL-300:ISOPU
3	HASL-300:ISOU
4	EPA:901.1
5	EPA:905.0
6	EPA 900.0/SW846 9310
7	EPA 900.0/SW846 9310

Surrogate/Tracer	Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer		Alphaspec Am241 Liquid "As Received"	1699914	90.8	(50%-105%)
Plutonium-242 Tracer		ISOPU "As Received"	1699915	86.3	(50%-105%)
Uranium-232 Tracer		IsoU "As Received"	1706340	60.6	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1701506	98.1	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Project: LANL- WQH Water Samples

Client Sample ID: CAWA-17-143061

Sample ID: 432512012

Report Date: October 6, 2017

Project: ESHL00114

Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	PF	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test											Batch ID	Recovery%	Acceptable Limits	

Notes:

The MDC is a sample specific MDC.

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

Lc/LC: Critical Level

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Mtd.: Method

PF: Prep Factor

RL: Reporting Limit

TPU: Total Propagated Uncertainty

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: October 6, 2017

Page 1 of 6

Client : Los Alamos National Laboratory
TA-00, SM1237, Rm104C

Los Alamos, New Mexico

Contact: Ms. Nita Patel

Workorder: 432512

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1699914										
QC1203872996	432512009	DUP									
Americium-241	U	0.0181	U	0.015	pCi/L	0.0397		(0-1)	BXA4	10/02/17	13:00
	Uncert:	+/-0.027		+/-0.013							
	TPU:	+/-0.0271		+/-0.013							
**Americium-243 Tracer	2.62	1.76		1.10	pCi/L		42.1 *	(50%-105%)			
	Uncert:	+/-0.0896		+/-0.0863							
	TPU:	+/-0.154		+/-0.150							
QC1203872997	LCS										
Americium-241	1.97			1.98	pCi/L		101	(80%-120%)	BXA4	09/30/17	17:06
	Uncert:			+/-0.0638							
	TPU:			+/-0.111							
**Americium-243 Tracer	2.10			1.46	pCi/L		69.8	(50%-105%)			
	Uncert:			+/-0.0655							
	TPU:			+/-0.116							
QC1203872995	MB										
Americium-241			U	-0.00422	pCi/L				BXA4	09/30/17	17:06
	Uncert:			+/-0.00989							
	TPU:			+/-0.00989							
**Americium-243 Tracer	2.10			1.64	pCi/L		78.1	(50%-105%)			
	Uncert:			+/-0.0669							
	TPU:			+/-0.118							
Batch	1699915										
QC1203873005	432512009	DUP									
Plutonium-238	U	-0.00251	U	0.0364	pCi/L	0.784		(0-1)	BXA4	10/02/17	13:00
	Uncert:	+/-0.00561		+/-0.0191							
	TPU:	+/-0.00561		+/-0.0192							
Plutonium-239/240	U	0.015	U	-0.00309	pCi/L	0.348		(0-1)			
	Uncert:	+/-0.00938		+/-0.0166							
	TPU:	+/-0.00942		+/-0.0166							
**Plutonium-242 Tracer	2.47	1.64		1.11	pCi/L		45 *	(50%-105%)			
	Uncert:	+/-0.0791		+/-0.0677							
	TPU:	+/-0.156		+/-0.145							
QC1203873006	LCS										
Plutonium-238			U	0.00817	pCi/L			(80%-120%)	BXA4	09/30/17	17:06
	Uncert:			+/-0.00712							
	TPU:			+/-0.00714							
Plutonium-239/240	1.98			1.94	pCi/L		98	(80%-120%)			
	Uncert:			+/-0.057							
	TPU:			+/-0.117							
**Plutonium-242 Tracer	1.97			1.68	pCi/L		85.1	(50%-105%)			
	Uncert:			+/-0.0573							
	TPU:			+/-0.119							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1699915										
QC1203873004	MB										
Plutonium-238			U	0.00795	pCi/L				BXA4	09/30/17	17:06
				Uncert: +/-0.00843							
				TPU: +/-0.00844							
Plutonium-239/240			U	-0.00199	pCi/L						
				Uncert: +/-0.00866							
				TPU: +/-0.00866							
**Plutonium-242 Tracer	1.97			1.56	pCi/L		79.1	(50%-105%)			
				Uncert: +/-0.0633							
				TPU: +/-0.125							
Batch	1706340										
QC1203888614	432507001	DUP									
Uranium-234		4.01		4.02	pCi/L	0.00664		(0-1)	MXS2	10/04/17	23:52
		Uncert: +/-0.415		+/-0.434							
		TPU: +/-0.459		+/-0.477							
Uranium-235/236		U 0.651	U	0.995	pCi/L	0.373		(0-1)			
		Uncert: +/-0.194		+/-0.259							
		TPU: +/-0.197		+/-0.264							
Uranium-238		3.16		3.04	pCi/L	0.0745		(0-1)			
		Uncert: +/-0.362		+/-0.385							
		TPU: +/-0.394		+/-0.413							
**Uranium-232 Tracer	42.0	32.1		26.5	pCi/L		63.1	(50%-105%)			
		Uncert: +/-1.32		+/-1.38							
		TPU: +/-2.44		+/-2.50							
QC1203888615	LCS										
Uranium-234				2.55	pCi/L				MXS2	10/04/17	23:52
		Uncert: +/-0.085		+/-0.160							
		TPU: +/-0.160									
Uranium-235/236				0.272	pCi/L						
		Uncert: +/-0.0313		+/-0.0345							
		TPU: +/-0.0345									
Uranium-238	2.70			2.88	pCi/L		107	(80%-120%)			
		Uncert: +/-0.0905		+/-0.177							
		TPU: +/-0.177									
**Uranium-232 Tracer	2.10			1.40	pCi/L		66.8	(50%-105%)			
		Uncert: +/-0.0791		+/-0.136							
		TPU: +/-0.136									
QC1203888613	MB										
Uranium-234			U	0.047	pCi/L				MXS2	10/04/17	23:52
		Uncert: +/-0.0139		+/-0.0141							
		TPU: +/-0.0141									
Uranium-235/236			U	0.0205	pCi/L						
		Uncert: +/-0.00859		+/-0.00865							
		TPU: +/-0.00865									
Uranium-238			U	0.0195	pCi/L						
		Uncert: +/-0.0102		+/-0.0102							
		TPU: +/-0.0102									

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1706340										
*Uranium-232 Tracer	2.10			1.57	pCi/L		74.9	(50%-105%)			
	Uncert:			+/-0.0725							
	TPU:			+/-0.129							
Rad Gamma Spec											
Batch	1701094										
QC1203876225	432512009	DUP									
Cesium-137	U	-0.242	U	-0.947	pCi/L	0.138		(0-1)	MXR1	09/26/17	11:51
	Uncert:	+/-1.28		+/-1.26							
	TPU:	+/-1.28		+/-1.28							
Cobalt-60	U	-0.666	U	-1.25	pCi/L	0.111		(0-1)			
	Uncert:	+/-1.38		+/-1.21							
	TPU:	+/-1.39		+/-1.24							
Neptunium-237	U	-2.02	U	-5.85	pCi/L	0.327		(0-1)			
	Uncert:	+/-2.37		+/-3.16							
	TPU:	+/-2.41		+/-3.45							
Potassium-40	UI	55.2	U	-38.5	pCi/L	1.04		(0-1)			
	Uncert:	+/-28.6		+/-13.7							
	TPU:	+/-28.8		+/-16.5							
Sodium-22	U	-1.84	U	-0.0881	pCi/L	0.349		(0-1)			
	Uncert:	+/-1.38		+/-1.08							
	TPU:	+/-1.44		+/-1.08							
QC1203876226	LCS										
Americium-241	34300			32500	pCi/L		94.8	(80%-120%)	MXR1	09/26/17	11:28
	Uncert:			+/-333							
	TPU:			+/-1280							
Cesium-137	13000			13500	pCi/L		104	(80%-120%)			
	Uncert:			+/-149							
	TPU:			+/-334							
Cobalt-60	11500			11300	pCi/L		98.5	(80%-120%)			
	Uncert:			+/-149							
	TPU:			+/-260							
Neptunium-237			U	86.5	pCi/L						
	Uncert:			+/-46.7							
	TPU:			+/-50.8							
Potassium-40			U	-102	pCi/L						
	Uncert:			+/-91.0							
	TPU:			+/-94.0							
Sodium-22			U	24.3	pCi/L						
	Uncert:			+/-13.4							
	TPU:			+/-14.5							
QC1203876224	MB										
Cesium-137			U	-1.46	pCi/L				MXR1	09/26/17	09:17
	Uncert:			+/-1.44							
	TPU:			+/-1.48							
Cobalt-60			U	-0.407	pCi/L						
	Uncert:			+/-1.67							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 4 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1701094										
Neptunium-237	TPU:			+/-1.67							
			U	0.653	pCi/L						
	Uncert:			+/-2.04							
Potassium-40	TPU:			+/-2.05							
			U	-9.63	pCi/L						
	Uncert:			+/-21.7							
Sodium-22	TPU:			+/-21.8							
			U	1.81	pCi/L						
	Uncert:			+/-1.75							
TPU:				+/-1.80							
Rad Gas Flow											
Batch	1701372										
QC1203876912	432512009 DUP										
Alpha		U	0.887	4.26	pCi/L	0.833		(0-1)	BXG2	09/20/17	11:07
	Uncert:		+/-0.778	+/-1.19							
	TPU:		+/-0.783	+/-1.25							
Beta			1.80	1.90	pCi/L	0.0616		(0-1)		09/19/17	17:30
	Uncert:		+/-0.423	+/-0.397							
	TPU:		+/-0.451	+/-0.427							
QC1203876915	LCS										
Alpha	12.1			12.8	pCi/L		106	(80%-120%)	BXG2	09/20/17	11:08
	Uncert:			+/-0.608							
	TPU:			+/-1.25							
Beta	47.6			50.8	pCi/L		107	(80%-120%)		09/19/17	17:29
	Uncert:			+/-0.867							
	TPU:			+/-4.30							
QC1203876911	MB										
Alpha			U	0.155	pCi/L				BXG2	09/20/17	11:06
	Uncert:			+/-0.0989							
	TPU:			+/-0.0998							
Beta			U	0.114	pCi/L					09/19/17	17:30
	Uncert:			+/-0.0562							
	TPU:			+/-0.057							
QC1203876913	432512009 MS										
Alpha	483	U	0.887	484	pCi/L		100	(75%-125%)	BXG2	09/20/17	11:06
	Uncert:		+/-0.778	+/-23.5							
	TPU:		+/-0.783	+/-47.1							
Beta	1900		1.80	1980	pCi/L		104	(75%-125%)		09/19/17	17:29
	Uncert:		+/-0.423	+/-34.3							
	TPU:		+/-0.451	+/-167							
QC1203876914	432512009 MSD										
Alpha	483	U	0.887	440	pCi/L	0.224	91	(0-1)	BXG2	09/20/17	11:06
	Uncert:		+/-0.778	+/-24.7							
	TPU:		+/-0.783	+/-52.2							
Beta	1900		1.80	2010	pCi/L	0.0477	105	(0-1)		09/19/17	17:29
	Uncert:		+/-0.423	+/-34.7							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 5 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time	
Rad Gas Flow												
Batch	1701372											
Batch	1701506	TPU:	+/-0.451	+/-171								
QC1203877337	432512012	DUP										
Strontium-90		U	0.483	U	0.374	pCi/L	0.17	(0-1)	BXF1	09/27/17	12:10	
		Uncert:	+/-0.158	+/-0.155								
		TPU:	+/-0.163	+/-0.158								
**Strontium Carrier		7.85	7.70	6.20	mg		79	(50%-105%)				
QC1203877339	LCS											
Strontium-90		23.8		19.8	pCi/L		83.4	(80%-120%)	BXF1	09/27/17	09:04	
		Uncert:		+/-0.537								
		TPU:		+/-1.68								
**Strontium Carrier		7.85		7.70	mg		98.1	(50%-105%)				
QC1203877336	MB											
Strontium-90				U	0.0858	pCi/L			BXF1	09/26/17	15:59	
		Uncert:		+/-0.124								
		TPU:		+/-0.124								
**Strontium Carrier		7.85		7.60	mg		96.8	(50%-105%)				
QC1203877338	432512012	MS										
Strontium-90		238	U	0.483	199	pCi/L		83.5	(75%-125%)	BXF1	09/27/17	09:04
		Uncert:		+/-0.158	+/-5.57							
		TPU:		+/-0.163	+/-17.2							
**Strontium Carrier		7.85	7.70	7.30	mg		93	(50%-105%)				

Notes:

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected

GEL LABORATORIES LLC

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

QC Summary

Workorder: 432512

Page 6 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.									
UI	Gamma Spectroscopy--Uncertain identification									
UJ	Gamma Spectroscopy--Uncertain identification									
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.									
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.									
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.									
h	Preparation or preservation holding time was exceeded									

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.