

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: CAWA-17-142854

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1138		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	RSP	
LOCATION ID:	16-26644		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	MA
	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:

08/31/2017

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

COLLECTED BY (PRINT): D. Jaramillo & K. Taw

RELINQUISHED BY (Printed Name) (Signature)	Katrina Taw <i>[Signature]</i>	Date/Time 08/31/2017 1450	RECEIVED BY (Printed Name) (Signature)	M. Martinez <i>[Signature]</i>	Date/Time 8/31/17 1450
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-17-142881

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1358		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-26 S1		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
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE	Y	
	WSP- NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	Y	

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): D. Jaramila & K. TOW

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 08/31/2017 1450	RECEIVED BY (Printed Name) (Signature)	Date/Time 8/31/17 1450
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-17-142889

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1138		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	RSP	
LOCATION ID:	16-26644		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <input checked="" type="radio"/> NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	MSGP-Hg	100D 500 ML POLY 8/31/17	1	HNO3	Y	MA
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: HE spot test completed; Results negative

LOCATION COMMENTS: MA

FIELD PARAMETERS:

Sample Time	1138	HH:MM	Dissolved Oxygen	7.77	Flow (in gpm)	0.38
Oxidation-Reduction Potential	222.3		pH	6.94	Specific Conductance	201.5
Temperature	13.1		Turbidity	1.2		

COLLECTED BY (PRINT): D. Sammi/110 & K. DW

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 08/31/2017 1455	RECEIVED BY (Printed Name) (Signature)	M. Martinez <i>[Signature]</i>	Date/Time 8/31/17 1450
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

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

SAMPLE ID: CAWA-17-142916

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1358		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-26 S1		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1000 500 ML POLY in 8/31/17	1	HNO3	Y	NA
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled 50 ft. from running diesel generator

LOCATION COMMENTS: HE spot test completed, Results negative

FIELD PARAMETERS:

Sample Time	1358	HH:MM	Dissolved Oxygen	6.63	Flow (in gpm)	3.70
Oxidation-Reduction Potential	252.2		pH	7.63	Specific Conductance	100.2
Temperature	16.6		Turbidity	0.5		

COLLECTED BY (PRINT): D. Iramillo & K. Tow

RELINQUISHED BY (Printed Name) Daniel Iramillo (Signature) <i>[Signature]</i>	Date/Time 08/31/2017 1450 + 5:55 PM	RECEIVED BY (Printed Name) M. Math... (Signature) <i>[Signature]</i>	Date/Time 8/31/17 1452
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

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

SAMPLE ID: CAPA-17-142932

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1313		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-18		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-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 _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): M. Shendo

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 8-31-17 1440	RECEIVED BY (Printed Name) <i>M. Shendo</i> (Signature) <i>M. Shendo</i>	Date/Time 8/31/17 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

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

SAMPLE ID: CAPA-17-142934

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1313		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-18		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	500 ML POLY 1000 TV 8-31-17	1	HNO3	Y	NA
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: *no* *TV 8-31-17* Sampled with running diesel generator ~30ft away.

LOCATION COMMENTS: *none*

FIELD PARAMETERS:

Sample Time	1313	HH:MM	Dissolved Oxygen	5.36 mg/l	Flow (in gpm)	6.98
Oxidation-Reduction Potential	139.8 mV		pH	7.53	Specific Conductance	115.1 $\mu S/cm$
Temperature	16.2 °C		Turbidity	2.8		

COLLECTED BY (PRINT): M. Shendo

RELINQUISHED BY (Printed Name) <i>Maurice Shendo</i> (Signature) <i>[Signature]</i>	Date/Time 8-31-17 1440	RECEIVED BY <i>M. Martin</i> (Printed Name) (Signature) <i>[Signature]</i>	Date/Time 8/31/17 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

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

SAMPLE ID: CAPA-17-142963

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1313		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-18		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	FD	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <u>NA</u>

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

SAMPLE COMMENTS:

none

LOCATION COMMENTS:

none

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): M. Shendo

RELINQUISHED BY (Printed Name) <i>Maurice Shendo</i> (Signature) <i>[Signature]</i>	Date/Time 8-31-17 1445	RECEIVED BY <i>M. Shendo</i> (Printed Name) <i>[Signature]</i> (Signature)	Date/Time 8/31/17 1445
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-17-142968

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/31/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1313		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-18		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FD	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	500 ML POLY 1000 TV 8-31-17	1	HNO3	Y	na
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): M. Shendo

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 8-31-17 1440	RECEIVED BY (Printed Name) <i>M. Shendo</i> (Signature) <i>M. Shendo</i>	Date/Time 8/31/17 1440
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11390

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

SAMPLE ID: CAPA-17-143007

WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
Date Collected (MM/DD/YYYY):	08/31/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1313		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-18		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA ³

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

SAMPLE COMMENTS: Received with broken custody seal; SMO personnel gives approval to use.

LOCATION COMMENTS:
none

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH TV 8-31-17 Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. VanderVis

RELINQUISHED BY (Printed Name) Tanya VanderVis (Signature) <i>Tanya VanderVis</i>	Date/Time 8-31-17 1440	RECEIVED BY (Printed Name) <i>M. Martin</i> (Signature) <i>[Signature]</i>	Date/Time 8/31/17 1440
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-17-143023

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1138		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	16-26644		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
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1/2	HCL	Y	MA

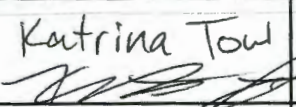
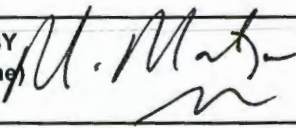
SAMPLE COMMENTS: custody seal broken: Approved by SMO personnel to use

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (l/min) _____
Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): D. Jaramilla & K. Tow

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow 	Date/Time 08/31/2017 1450	RECEIVED BY (Printed Name) (Signature)	M. Math 	Date/Time 8/31/17 1450
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-17-143031

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	08/31/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1358		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-26 S1		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	FTB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / <u>NO</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1 2	HCL 8/31/17	Y	NA

SAMPLE COMMENTS: CUSTODY Seal Broken on FTB: Approved by SHD personal to use

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Jaramillo & K. Tan

RELINQUISHED BY (Printed Name) <u>Dane Jaramillo</u> (Signature) <u>[Signature]</u>	Date/Time <u>08/31/2017</u> <u>1450</u>	RECEIVED BY (Printed Name) <u>M. M. [Signature]</u> (Signature) <u>[Signature]</u>	Date/Time <u>8/31/17</u> <u>1450</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 08/24/2017

COC: 2017-2664


TEST - Field Screen		YES	NO	NA
The sample has field screening measurements of alpha activity and beta activity.				
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			
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.		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 ≥ 27,000 U-238 ≥ 270,000 H-3 ≥ 27,000,000,000 			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> , based on prior analytical measurements of radioactive isotopes.			X	

TEST - AK		YES	NO	NA
The shippers documented knowledge of the sample positively identifies appropriate labeling.				
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.				

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) MATT ENGLERT	9-1-17
(Signature) 	7:41

DATA VALIDATION REPORT

Chain Of Custody No. 2017-2664

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
432105	EPA:120.1	3	1			
432105	EPA:150.1	3	1			
432105	EPA:160.1	3	1			
432105	EPA:170.0	6	2	3		
432105	EPA:245.2	6	2			
432105	EPA:300.0	3	1			
432105	EPA:310.1	3	1			
432105	EPA:335.4	3	1			
432105	EPA:350.1	3	1			
432105	EPA:351.2	3	1			
432105	EPA:353.2	3	1			
432105	EPA:365.4	3	1			
432105	SM:A2340B	3	1			
432105	SW-846:6010C	3	1			
432105	SW-846:6020	3	1			
432105	SW-846:6850	3	1			
432105	SW-846:8260B	3	1	3		
432105	SW-846:8330B	3	1			
432105	SW-846:9060	3	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
432105	EPA:120.1	1701648	1701648	3	1									1			2				
432105	EPA:150.1	1698844	1698844	3	1									1			1				
432105	EPA:160.1	1698443	1698443	3	1				1					1			1				
432105	EPA:170.0	NA	NA	6	2	3															
432105	EPA:245.2	1701447	1701439	6	2				1	1				1			1				

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
432105	EPA:300.0	1699909	1699909	3	1				1					1			1				
432105	EPA:310.1	1698841	1698841	3	1					1				1			1				
432105	EPA:335.4	1697937	1697936	3	1				1	1				1			1				
432105	EPA:350.1	1698259	1698258	3	1				1	1				1			1				
432105	EPA:351.2	1698267	1698266	3	1				1	1				1			1				
432105	EPA:353.2	1698270	1698270	3	1				1					1			1				
432105	EPA:365.4	1698273	1698272	3	1				1	1				1			1				
432105	SM:A2340B	1703555	1703555	3	1																
432105	SW-846:6010C	1698294	1698293	3	1				1	1				1			1				
432105	SW-846:6020	1698277	1698276	3	1				1	1				1			1				
432105	SW-846:6850	1698696	1698687	3	1				1	1	1			1							
432105	SW-846:8260B	1700295	1700295	3	1	3			1					2							
432105	SW-846:8330B	1698678	1698677	3	1				1	1	1			1							
432105	SW-846:9060	1699093	1699093	3	1				1					1			2				

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-17-142931	1203877745	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-142859	1203877746	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203877744	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-142881	1203871261	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203870477	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-17-142932	432105004	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:160.1	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-142867	1203869517	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203869514	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203869513	MB	1	0	0	0
EPA:170.0	VOC	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:170.0	VOC	CAPA-17-142934	432105005	REG	1	0	0	0
EPA:170.0	VOC	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:170.0	VOC	CAPA-17-142968	432105007	FD	1	0	0	0
EPA:170.0	VOC	CAPA-17-143007	432105008	FTB	1	0	0	0
EPA:170.0	VOC	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-142889	432105002	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-142916	432105010	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-143023	432105003	FTB	1	0	0	0
EPA:170.0	VOC	CAWA-17-143031	432105011	FTB	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142934	432105005	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:245.2	INORGANIC	CAPA-17-142968	432105007	FD	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-142854	1203877128	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-142854	1203877130	MS	0	0	1	0
EPA:245.2	INORGANIC	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-142889	432105002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-142916	432105010	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203877127	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203877126	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-142859	1203873012	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203873011	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203873010	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-142881	1203870473	DUP	2	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:310.1	GENERAL CHEMISTRY	CAWA-17-142881	1203870475	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203870470	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAPA-17-142934	432105005	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPA-17-142968	432105007	FD	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142889	432105002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142902	1203868315	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142902	1203868317	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-142916	432105010	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203868314	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203868313	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203868980	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203868979	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	WST35-17-144903	1203868982	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	WST35-17-144903	1203868984	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-17-142934	432105005	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-17-142968	432105007	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-142889	432105002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-142916	432105010	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203869000	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203868999	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	WST35-17-144903	1203869002	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	WST35-17-144903	1203869006	MS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-142881	432105009	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203869020	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203869019	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	WST35-17-144903	1203869021	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-17-142932	432105004	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-17-142963	432105006	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142854	1203869044	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142854	1203869046	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142854	432105001	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-142881	432105009	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	LCS	1203869042	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203869041	MB	1	0	0	0
SM:A2340B	INORGANIC	CAPA-17-142932	432105004	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPA-17-142963	432105006	FD	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-142854	432105001	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-142881	432105009	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAPA-17-142932	432105004	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAPA-17-142963	432105006	FD	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-142854	1203869089	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-142854	1203869090	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAWA-17-142854	432105001	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-142881	432105009	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203869088	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203869087	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPA-17-142932	432105004	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-17-142963	432105006	FD	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-142854	1203869054	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-142854	1203869055	MS	0	0	11	0
SW-846:6020	INORGANIC	CAWA-17-142854	432105001	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-142881	432105009	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203869053	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203869052	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142931	1203870073	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142931	1203870074	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142932	432105004	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-17-142963	432105006	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-142854	432105001	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-142881	432105009	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203870072	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203870071	MB	1	0	0	0
SW-846:8260B	VOC	CAPA-17-142934	432105005	REG	80	3	0	0
SW-846:8260B	VOC	CAPA-17-142968	432105007	FD	80	3	0	0
SW-846:8260B	VOC	CAPA-17-143007	432105008	FTB	80	3	0	0
SW-846:8260B	VOC	CAWA-17-142889	432105002	REG	80	3	0	0
SW-846:8260B	VOC	CAWA-17-142916	432105010	REG	80	3	0	0
SW-846:8260B	VOC	CAWA-17-143023	432105003	FTB	80	3	0	0
SW-846:8260B	VOC	CAWA-17-143031	432105011	FTB	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	MB	1203874198	MB	80	3	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-846:8330B	LCMS/MS HIGH	CAPA-17-142934	432105005	REG	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAPA-17-142968	432105007	FD	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-142889	432105002	REG	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-142902	1203870024	MS	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-142902	1203870025	MSD	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-142916	432105010	REG	23	1	0	0
SW-846:8330B	LCMS/MS HIGH	LCS	1203870023	LCS	0	1	23	0
SW-846:8330B	LCMS/MS HIGH	MB	1203870022	MB	23	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-17-142934	1203871105	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-17-142934	432105005	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-17-142968	432105007	FD	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-142889	432105002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-142916	432105010	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203871103	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203871102	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	WT_IPC-17-135360	1203871104	DUP	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

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	1203869087	METHOD BLANK	SW-846:6010C	W	Zinc	5.39	J	ug/L	10.0
MB	1203871102	METHOD BLANK	SW-846:9060	W	Total Organic Carbon	0.673	J	mg/L	1.00
MB	1203874198	METHOD BLANK	SW-846:8260B	W	Hexachlorobutadiene	0.49	J	ug/L	1.00

DATA VALIDATION REPORT

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
CAWA-17-143023	432105003	TRIP BLANK	EPA:170.0	W	Temperature	3			Deg C	
CAPA-17-143007	432105008	TRIP BLANK	EPA:170.0	W	Temperature	3			Deg C	
CAWA-17-143031	432105011	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
CAWA-17-142889	1203874198	METHOD BLANK	SW-846:8260B	Hexachlorobutadiene	0.49	ug/L	0.35	BJ	1.00	Y	5	100	Y
CAWA-17-142889	1203871102	METHOD BLANK	SW-846:9060	Total Organic Carbon	0.673	mg/L	0.807	J	1.00	Y	5	100	Y
CAPA-17-142968	1203871102	METHOD BLANK	SW-846:9060	Total Organic Carbon	0.673	mg/L	0.365	J	1.00	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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

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
WST35-17-144903	1203869006		EPA:351.2	Total Kjeldahl Nitrogen	1698266	09-06-2017	W	128		110	90	10		

DATA VALIDATION REPORT

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-18	2017-2664	CAPA-17-142968	FD	INIT	GENERAL CHEMISTRY	SW-846:9060	Total Organic Carbon	J	U	I4	N	0.365	mg/L	0.365	mg/L			W	08/31/2017		1699093	VAL	Y
16-26644	2017-2664	CAWA-17-142889	REG	INIT	VOC	SW-846:8260B	Hexachlorobutadiene	BJ	U	N4	N	0.35	ug/L	0.35	ug/L			W	08/31/2017		1700295	VAL	Y
16-26644	2017-2664	CAWA-17-142889	REG	INIT	GENERAL CHEMISTRY	SW-846:9060	Total Organic Carbon	J	U	I4	N	0.807	mg/L	0.807	mg/L			W	08/31/2017		1699093	VAL	Y

Reason Code

Description

I4

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

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 qualifire. The analyte is detected in the sample.

U_LAB

The analytical laboratory qualified the analyte as not detected.

DATA VALIDATION REPORT

Reason Code

Description

V4

The sample result is less than or equal to 5 times (10 times for acetone, methylene chloride, and 2-butanone) the concentration of the related analyte in the method blank, which indicates the reported detection is considered indistinguishable from contamination in the blank.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-142932	R-18	REG	EPA:120.1	0	1
CAPA-17-142932	R-18	REG	EPA:150.1	0	1
CAPA-17-142932	R-18	REG	EPA:160.1	0	1
CAPA-17-142932	R-18	REG	EPA:170.0	0	1
CAPA-17-142932	R-18	REG	EPA:245.2	0	1
CAPA-17-142932	R-18	REG	EPA:300.0	0	4
CAPA-17-142932	R-18	REG	EPA:310.1	0	2
CAPA-17-142932	R-18	REG	EPA:350.1	0	1
CAPA-17-142932	R-18	REG	EPA:353.2	0	1
CAPA-17-142932	R-18	REG	EPA:365.4	0	1
CAPA-17-142932	R-18	REG	SM:A2340B	0	1
CAPA-17-142932	R-18	REG	SW-846:6010C	0	17
CAPA-17-142932	R-18	REG	SW-846:6020	0	11
CAPA-17-142932	R-18	REG	SW-846:6850	0	1
CAPA-17-142934	R-18	REG	EPA:170.0	0	1
CAPA-17-142934	R-18	REG	EPA:245.2	0	1
CAPA-17-142934	R-18	REG	EPA:335.4	0	1
CAPA-17-142934	R-18	REG	EPA:351.2	0	1
CAPA-17-142934	R-18	REG	SW-846:8260B	0	80
CAPA-17-142934	R-18	REG	SW-846:8330B	0	23
CAPA-17-142934	R-18	REG	SW-846:9060	0	1
CAPA-17-142963	R-18	FD	EPA:120.1	0	1
CAPA-17-142963	R-18	FD	EPA:150.1	0	1
CAPA-17-142963	R-18	FD	EPA:160.1	0	1
CAPA-17-142963	R-18	FD	EPA:170.0	0	1
CAPA-17-142963	R-18	FD	EPA:245.2	0	1
CAPA-17-142963	R-18	FD	EPA:300.0	0	4
CAPA-17-142963	R-18	FD	EPA:310.1	0	2
CAPA-17-142963	R-18	FD	EPA:350.1	0	1
CAPA-17-142963	R-18	FD	EPA:353.2	0	1
CAPA-17-142963	R-18	FD	EPA:365.4	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-142963	R-18	FD	SM:A2340B	0	1
CAPA-17-142963	R-18	FD	SW-846:6010C	0	17
CAPA-17-142963	R-18	FD	SW-846:6020	0	11
CAPA-17-142963	R-18	FD	SW-846:6850	0	1
CAPA-17-142968	R-18	FD	EPA:170.0	0	1
CAPA-17-142968	R-18	FD	EPA:245.2	0	1
CAPA-17-142968	R-18	FD	EPA:335.4	0	1
CAPA-17-142968	R-18	FD	EPA:351.2	0	1
CAPA-17-142968	R-18	FD	SW-846:8260B	0	80
CAPA-17-142968	R-18	FD	SW-846:8330B	0	23
CAPA-17-142968	R-18	FD	SW-846:9060	0	1
CAPA-17-143007	R-18	FTB	EPA:170.0	0	1
CAPA-17-143007	R-18	FTB	SW-846:8260B	0	80
CAWA-17-142854	16-26644	REG	EPA:120.1	0	1
CAWA-17-142854	16-26644	REG	EPA:150.1	0	1
CAWA-17-142854	16-26644	REG	EPA:160.1	0	1
CAWA-17-142854	16-26644	REG	EPA:170.0	0	1
CAWA-17-142854	16-26644	REG	EPA:245.2	0	1
CAWA-17-142854	16-26644	REG	EPA:300.0	0	4
CAWA-17-142854	16-26644	REG	EPA:310.1	0	2
CAWA-17-142854	16-26644	REG	EPA:350.1	0	1
CAWA-17-142854	16-26644	REG	EPA:353.2	0	1
CAWA-17-142854	16-26644	REG	EPA:365.4	0	1
CAWA-17-142854	16-26644	REG	SM:A2340B	0	1
CAWA-17-142854	16-26644	REG	SW-846:6010C	0	17
CAWA-17-142854	16-26644	REG	SW-846:6020	0	11
CAWA-17-142854	16-26644	REG	SW-846:6850	0	1
CAWA-17-142881	R-26 S1	REG	EPA:120.1	0	1
CAWA-17-142881	R-26 S1	REG	EPA:150.1	0	1
CAWA-17-142881	R-26 S1	REG	EPA:160.1	0	1
CAWA-17-142881	R-26 S1	REG	EPA:170.0	0	1
CAWA-17-142881	R-26 S1	REG	EPA:245.2	0	1
CAWA-17-142881	R-26 S1	REG	EPA:300.0	0	4
CAWA-17-142881	R-26 S1	REG	EPA:310.1	0	2
CAWA-17-142881	R-26 S1	REG	EPA:350.1	0	1
CAWA-17-142881	R-26 S1	REG	EPA:353.2	0	1
CAWA-17-142881	R-26 S1	REG	EPA:365.4	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-142881	R-26 S1	REG	SM:A2340B	0	1
CAWA-17-142881	R-26 S1	REG	SW-846:6010C	0	17
CAWA-17-142881	R-26 S1	REG	SW-846:6020	0	11
CAWA-17-142881	R-26 S1	REG	SW-846:6850	0	1
CAWA-17-142889	16-26644	REG	EPA:170.0	0	1
CAWA-17-142889	16-26644	REG	EPA:245.2	0	1
CAWA-17-142889	16-26644	REG	EPA:335.4	0	1
CAWA-17-142889	16-26644	REG	EPA:351.2	0	1
CAWA-17-142889	16-26644	REG	SW-846:8260B	0	80
CAWA-17-142889	16-26644	REG	SW-846:8330B	0	23
CAWA-17-142889	16-26644	REG	SW-846:9060	0	1
CAWA-17-142916	R-26 S1	REG	EPA:170.0	0	1
CAWA-17-142916	R-26 S1	REG	EPA:245.2	0	1
CAWA-17-142916	R-26 S1	REG	EPA:335.4	0	1
CAWA-17-142916	R-26 S1	REG	EPA:351.2	0	1
CAWA-17-142916	R-26 S1	REG	SW-846:8260B	0	80
CAWA-17-142916	R-26 S1	REG	SW-846:8330B	0	23
CAWA-17-142916	R-26 S1	REG	SW-846:9060	0	1
CAWA-17-143023	16-26644	FTB	EPA:170.0	0	1
CAWA-17-143023	16-26644	FTB	SW-846:8260B	0	80
CAWA-17-143031	R-26 S1	FTB	EPA:170.0	0	1
CAWA-17-143031	R-26 S1	FTB	SW-846:8260B	0	80

September 18, 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: 432105
SDG: 2017-2664

Dear Ms. Patel:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on September 02, 2017, and analyzed for Explosives by LCMSMS, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS. 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,



Katrina Hiott for
Valerie Davis
Project Manager

Chain of Custody: 2017-2664
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 432105
SDG: 2017-2664

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 432105
SDG # : 2017-2664**

September 18, 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 02, 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>
432105001	CAWA-17-142854
432105002	CAWA-17-142889
432105003	CAWA-17-143023
432105004	CAPA-17-142932
432105005	CAPA-17-142934
432105006	CAPA-17-142963
432105007	CAPA-17-142968
432105008	CAPA-17-143007
432105009	CAWA-17-142881
432105010	CAWA-17-142916
432105011	CAWA-17-143031

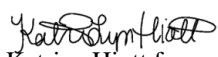
Case Narrative

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/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS.

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.



Katrina Hiott for
Valerie Davis
Project Manager

List of current GEL Certifications as of 18 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

General Engineering
Charleston SC

COC/Lab Request #:
2017-2664
Page 1 of 1

Chain of Custody/Analysis Request 432105

Client Contact:

Lab Agreement #: ADEP

Site Name: Los Alamos National Laboratory

Project Number:

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Days - ☐

14 Days - ☐

21 Days - ☐

28 Days - ☒

Field Sample ID

Sample Date

Sample Time

Sample Matrix

CAWA-17-142854

Aug 31 2017

11:38

W

CAWA-17-142889

Aug 31 2017

11:38

W

CAWA-17-143023

Aug 31 2017

11:38

W

CAPA-17-142932

Aug 31 2017

13:13

W

CAPA-17-142934

Aug 31 2017

13:13

W

CAPA-17-142963

Aug 31 2017

13:13

W

CAPA-17-142968

Aug 31 2017

13:13

W

CAPA-17-143007

Aug 31 2017

13:13

W

CAWA-17-142881

Aug 31 2017

13:58

W

CAWA-17-142916

Aug 31 2017

13:58

W

CAWA-17-143031

Aug 31 2017

13:58

W

Special Instructions:

Relinquished by: H-Eglar

Print Name: MAT ENGELST

Date/Time: 9-1-17 1500

Received by: Alexandra Amador

Print Name:

Date/Time: 9/1/17 9:05

Relinquished by:

Print Name:

Date/Time:

Received by:

Print Name:

Date/Time:

Relinquished by:

Print Name:

Date/Time:

Received by:

Print Name:

Date/Time:

Rad Screening Info:
LOCATION: NO

Lab Reporting Limit Type:
Sample Quantitation Limit: MDL

MSGP-Hg
WSP-8260B-VOA
WSP-8330B-NMED HEXMOD
WSP-All Metals
WSP-CN(T)
WSP-GENINORG+PerChlorate
WSP-NH3+NO3/NO2+PO4
WSP-TRKN+TOC

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

09.02 DATE: 01SEP17
JGT: 51.0 LB MAN
CAD: 0014176/CAFE2916

LOS ALAMOS, NM 87545
UNITED STATES US

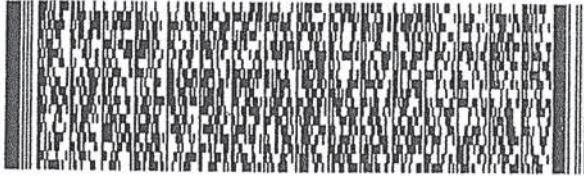
BILL SENDER

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

CHARLESTON SC 29407

(843) 666-8171

REF: 21PDOASRGW04BAGWE0



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

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LOS ALAMOS, NM 87545
UNITED STATES US

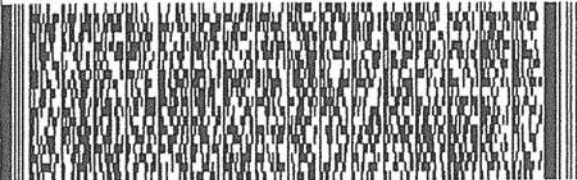
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TA00 BLDG 1237 DPU 03

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ACTWGT: 53.0 LB MAN
CAD: 0014176/CAFE2916

LOS ALAMOS, NM 87545
UNITED STATES US

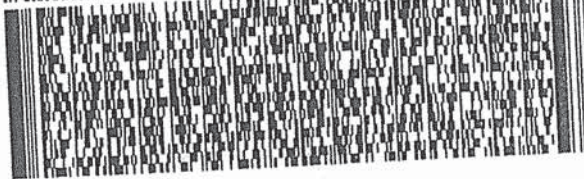
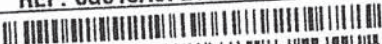
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GENERAL ENGINEERING LAB
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ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

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LOS ALAMOS, NM 87545
UNITED STATES US

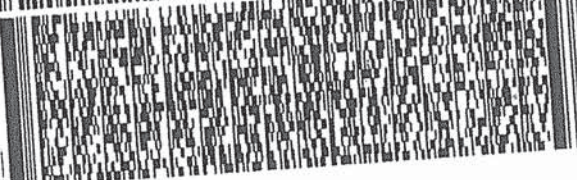
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1 of 2
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ORIGIN ID:SAFA (505) 665-9966
KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 01SEP17
ACTWGT: 60.0 LB MAN
CAD: 0014176/CAFE2916

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GENERAL ENGINEERING LAB
2040 SAVAGE RD

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(843) 666-8171

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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: 01SEP17
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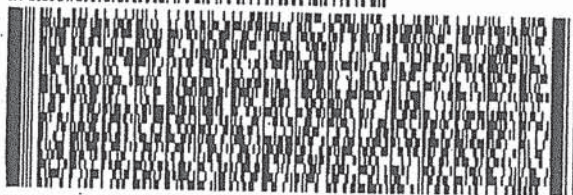
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TO **VALERIE DAVIS**
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 666-8171

REF: 21PD0ASRAE20DF6X00



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Express



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2 of 2

SATURDAY 12:00P

MPS# 5908 1782 6777
0263

PRIORITY OVERNIGHT

Mstr# 5908 1782 6766

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SC-US CHS



SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANE ESH/LAN</u>		SDG/AR/COC/Work Order: <u>43705</u>	
Received By: <u>JA</u>		Date Received: <u>9/2/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other	
		<u>5908 1782 6744(2)</u> <u>5908 1782 6766(2)</u> <u>5908 1782 6788(2)</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>2</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	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs <input type="checkbox"/> Dry Ice <input type="checkbox"/> None <input type="checkbox"/> Other: *all temperatures are recorded in Celsius TEMP: <u>3°</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR2-17</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's and Containers Affected: <u>W5153-17-144849 (2 bottles) + 144850 (1 bottle) received, unpreserved</u> If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials

[Signature]

Date

9/5/17

Page

1 of 1

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 #: 2017-2664
Work Order #: 432105**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1700295

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
432105002	CAWA-17-142889
432105003	CAWA-17-143023
432105005	CAPA-17-142934
432105007	CAPA-17-142968
432105008	CAPA-17-143007
432105010	CAWA-17-142916
432105011	CAWA-17-143031
1203874198	Method Blank (MB)
1203874200	Laboratory Control Sample (LCS)
1203874201	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)

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 blank 1203874198 (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

Sample 432512002 (CAPA-17-142953) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

Relative Percent Difference (RPD) Statement

The 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:

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

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: 2017-2664 GEL Work Order: 432105

The Qualifiers in this report are defined as follows:

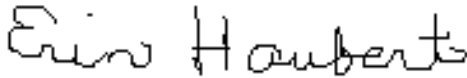
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that 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: 29 SEP 2017

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2664

Lab Sample ID: 432105002

Date Collected: 08/31/2017 11:38

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-142889

Batch ID: 1700295

Run Date: 09/13/2017 15:04

Prep Date: 09/13/2017 15:04

Data File: 091317V6\6Y307.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: 2017-2664

Lab Sample ID: 432105002

Date Collected: 08/31/2017 11:38

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-142889

Batch ID: 1700295

Run Date: 09/13/2017 15:04

Prep Date: 09/13/2017 15:04

Data File: 091317V6\6Y307.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	BJ	0.350	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	J	0.750	ug/L	0.300	1.00
108-88-3	Toluene	U	0.300	ug/L	0.300	1.00
79-01-6	Trichloroethylene	J	0.560	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: 2017-2664

Lab Sample ID: 432105002

Date Collected: 08/31/2017 11:38

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAWA-17-142889

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 15:04

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 15:04

Column: DB-624

Data File: 091317V6\6Y307.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	53.3	50.0	ug/L 107	(71%-134%)
Bromofluorobenzene	49.3	50.0	ug/L 99	(70%-131%)
Toluene-d8	47.9	50.0	ug/L 96	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.592	8.76	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664
Lab Sample ID: 432105003

Client ID: CAWA-17-143023
Batch ID: 1700295
Run Date: 09/13/2017 15:32
Prep Date: 09/13/2017 15:32
Data File: 091317V6\6Y308.D

Date Collected: 08/31/2017 11:38
Date Received: 09/02/2017 09:05
Client: ARSL004
Method: SW-846:8260B
Inst: VOA6.I
Analyst: JP1

Column: DB-624

Matrix: W

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

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	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: 2017-2664

Lab Sample ID: 432105003

Date Collected: 08/31/2017 11:38

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-143023

Batch ID: 1700295

Run Date: 09/13/2017 15:32

Prep Date: 09/13/2017 15:32

Data File: 091317V6\6Y308.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: 2017-2664

Lab Sample ID: 432105003

Date Collected: 08/31/2017 11:38

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAWA-17-143023

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 15:32

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 15:32

Data File: 091317V6\6Y308.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	53.2	50.0	ug/L 106	(71%-134%)
Bromofluorobenzene	49.4	50.0	ug/L 99	(70%-131%)
Toluene-d8	47.9	50.0	ug/L 96	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.6	5.06	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664

Lab Sample ID: 432105005

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAPA-17-142934

Batch ID: 1700295

Run Date: 09/13/2017 16:00

Prep Date: 09/13/2017 16:00

Data File: 091317V6\6Y309.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105005

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAPA-17-142934

Batch ID: 1700295

Run Date: 09/13/2017 16:00

Prep Date: 09/13/2017 16:00

Data File: 091317V6\6Y309.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: 2017-2664

Lab Sample ID: 432105005

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142934

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 16:00

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 16:00

Column: DB-624

Data File: 091317V6\6Y309.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	54.2	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	50.2	50.0	ug/L 100	(70%-131%)
Toluene-d8	48.2	50.0	ug/L 96	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.6	7.34	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664

Lab Sample ID: 432105007

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAPA-17-142968

Batch ID: 1700295

Run Date: 09/13/2017 16:28

Prep Date: 09/13/2017 16:28

Data File: 091317V6\6Y310.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105007

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

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: 09/13/2017 16:28

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 16:28

Data File: 091317V6\6Y310.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: 2017-2664

Lab Sample ID: 432105007

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-142968

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 16:28

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 16:28

Column: DB-624

Data File: 091317V6\6Y310.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	51.6	50.0	ug/L 103	(71%-134%)
Bromofluorobenzene	49.3	50.0	ug/L 99	(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	3.68	6.17	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664

Lab Sample ID: 432105008

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAPA-17-143007

Batch ID: 1700295

Run Date: 09/13/2017 16:56

Prep Date: 09/13/2017 16:56

Data File: 091317V6\6Y311.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105008

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAPA-17-143007

Batch ID: 1700295

Run Date: 09/13/2017 16:56

Prep Date: 09/13/2017 16:56

Data File: 091317V6\6Y311.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105008

Date Collected: 08/31/2017 13:13

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAPA-17-143007

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 16:56

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 16:56

Column: DB-624

Data File: 091317V6\6Y311.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	57.4	50.0	ug/L 115	(71%-134%)
Bromofluorobenzene	53.4	50.0	ug/L 107	(70%-131%)
Toluene-d8	52.6	50.0	ug/L 105	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.592	5.61	ug/L	0	J
	unknown siloxane	13.75	6.88	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664

Lab Sample ID: 432105010

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-142916

Batch ID: 1700295

Run Date: 09/13/2017 17:25

Prep Date: 09/13/2017 17:25

Data File: 091317V6\6Y312.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105010

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-142916

Batch ID: 1700295

Run Date: 09/13/2017 17:25

Prep Date: 09/13/2017 17:25

Data File: 091317V6\6Y312.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105010

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Method: SW-846:8260B

Project: ESHL00114

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 17:25

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 17:25

Data File: 091317V6\6Y312.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	52.2	50.0	ug/L 104	(71%-134%)
Bromofluorobenzene	49.4	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
	unknown	3.592	6.82	ug/L	0	J
	unknown siloxane	13.75	7.52	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-2664

Lab Sample ID: 432105011

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-143031

Batch ID: 1700295

Run Date: 09/13/2017 17:53

Prep Date: 09/13/2017 17:53

Data File: 091317V6\6Y313.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA6.I

Analyst: JP1

Column: DB-624

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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: 2017-2664

Lab Sample ID: 432105011

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client ID: CAWA-17-143031

Batch ID: 1700295

Run Date: 09/13/2017 17:53

Prep Date: 09/13/2017 17:53

Data File: 091317V6\6Y313.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: 2017-2664

Lab Sample ID: 432105011

Date Collected: 08/31/2017 13:58

Date Received: 09/02/2017 09:05

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAWA-17-143031

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1700295

Inst: VOA6.I

Dilution: 1

Run Date: 09/13/2017 17:53

Analyst: JP1

Purge Vol: 5 mL

Prep Date: 09/13/2017 17:53

Column: DB-624

Data File: 091317V6\6Y313.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	52.4	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	48.9	50.0	ug/L 98	(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
	unknown siloxane	13.75	7.12	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-2664**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
432105002	CAWA-17-142889	107	96	99
432105003	CAWA-17-143023	106	96	99
432105005	CAPA-17-142934	108	96	100
432105007	CAPA-17-142968	103	97	99
432105008	CAPA-17-143007	115	105	107
432105010	CAWA-17-142916	104	96	99
432105011	CAWA-17-143031	105	96	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

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: 2017-2664

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: 2017-2664

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

Page 3 of 4

SDG Number: 2017-2664

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

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Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2664

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

Page 1 of 1

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2664

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 8

SDG Number: 2017-2664

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

Page 2 of 8

SDG Number: 2017-2664

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: 2017-2664

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: 2017-2664

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: 2017-2664

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

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SDG Number: 2017-2664

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: 2017-2664

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: 2017-2664

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

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2664

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

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Quality Control Summary
Spike Recovery Report

SDG Number: 2017-2664

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	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

Method Blank Summary

Page 1 of 1

SDG Number: 2017-2664

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 CAWA-17-142889	432105002	091317V6\6Y307.D	09/13/17	1504
04 CAWA-17-143023	432105003	091317V6\6Y308.D	09/13/17	1532
05 CAPA-17-142934	432105005	091317V6\6Y309.D	09/13/17	1600
06 CAPA-17-142968	432105007	091317V6\6Y310.D	09/13/17	1628
07 CAPA-17-143007	432105008	091317V6\6Y311.D	09/13/17	1656
08 CAWA-17-142916	432105010	091317V6\6Y312.D	09/13/17	1725
09 CAWA-17-143031	432105011	091317V6\6Y313.D	09/13/17	1753
10 CAPA-17-142953PS	1203874204	091317V6\6Y321.D	09/13/17	2137
11 CAPA-17-142953PSD	1203874206	091317V6\6Y322.D	09/13/17	2205
12 CAPA-17-142953PS	1203874205	091317V6\6Y325.D	09/13/17	2329
13 CAPA-17-142953PSD	1203874207	091317V6\6Y326.D	09/13/17	2357

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2664

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

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
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: 2017-2664

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
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:	2017-2664	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: 2017-2664

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
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: 2017-2664

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**

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SDG Number:	2017-2664	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
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	107	(71%-134%)
Bromofluorobenzene	49.7	50.0	99	(70%-131%)
Toluene-d8	48.3	50.0	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-2664

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: 2017-2664

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
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:	2017-2664	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:	2017-2664	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: 2017-2664	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:	2017-2664	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: 2017-2664	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: 2017-2664	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:	2017-2664	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: 2017-2664	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: 2017-2664	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:	2017-2664	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	108	(71%-134%)
Bromofluorobenzene	48.3	50.0	97	(70%-131%)
Toluene-d8	48.3	50.0	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	2017-2664	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: 2017-2664	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:	2017-2664	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%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2664
Work Order #: 432105**

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: 1698696

Prep Batch Number: 1698687

Sample Analysis

Sample ID	Client ID
432105001	432105001 (CAWA-17-142854)
432105004	432105004 (CAPA-17-142932)
432105006	432105006 (CAPA-17-142963)
432105009	432105009 (CAWA-17-142881)
1203870076	Interference Check Sample (ICS)
1203870071	Method Blank (MB)
1203870072	Laboratory Control Sample (LCS)
1203870073	431853001(CAPA-17-142931) Matrix Spike (MS)
1203870074	431853001(CAPA-17-142931) 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 431853001 (CAPA-17-142931) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

Sample 1203870073 (MS) failed recovery for Perchlorate-101 at 133%. The acceptance range is from 75-125%. The failure of the MS was due to the background concentration of the parent sample, 431853001 (CAPA-17-142931). The LCS and MSD were within the acceptance range. 1203870073 (CAPA-17-142931MS).

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

Some initial calibration standards, continuing calibration standards, and/or sample 1203870074 (CAPA-17-142931MSD) required manual integrations due to software limitations. The raw data for the manual integrations will be found with the raw data file.

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: 2017-2664 GEL Work Order: 432105

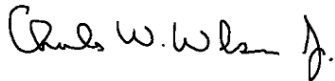
The Qualifiers in this report are defined as follows:

- * 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: Charles Wilson

Date: 09 SEP 2017

Title: Analyst II

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-142854Date Received: 02-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 432105001Date Filtered: 06-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	0.472	ug/L		1	06-SEP-17 22:49	per0906041a
	Perchlorate Isotope Ratio			3			1	06-SEP-17 22:49	per0906041a
14797-73-0	Perchlorate-101	.05	.2	0.458	ug/L		1	06-SEP-17 22:49	per0906041a
	Perchlorate-O(18)			0.400	ug/L		1	06-SEP-17 22:49	per0906041a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142932Date Received: 02-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 432105004Date Filtered: 06-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	0.283	ug/L		1	06-SEP-17 22:58	per0906042a
	Perchlorate Isotope Ratio			3.09			1	06-SEP-17 22:58	per0906042a
14797-73-0	Perchlorate-101	.05	.2	0.266	ug/L		1	06-SEP-17 22:58	per0906042a
	Perchlorate-O(18)			0.410	ug/L		1	06-SEP-17 22:58	per0906042a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142963Date Received: 02-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 432105006Date Filtered: 06-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	0.280	ug/L		1	06-SEP-17 23:07	per0906043a
	Perchlorate Isotope Ratio			3.11			1	06-SEP-17 23:07	per0906043a
14797-73-0	Perchlorate-101	.05	.2	0.261	ug/L		1	06-SEP-17 23:07	per0906043a
	Perchlorate-O(18)			0.402	ug/L		1	06-SEP-17 23:07	per0906043a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-142881Date Received: 02-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 432105009Date Filtered: 06-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	0.249	ug/L		1	06-SEP-17 23:16	per0906044a
	Perchlorate Isotope Ratio			2.91			1	06-SEP-17 23:16	per0906044a
14797-73-0	Perchlorate-101	.05	.2	0.248	ug/L		1	06-SEP-17 23:16	per0906044a
	Perchlorate-O(18)			0.402	ug/L		1	06-SEP-17 23:16	per0906044a

^ 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): 2017-2664

Extract Batch Code: 1698687

Date Filtered: 06-SEP-17

Matrix: WATER

Sample ID: 1203870072

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.211	ug/L	105		85 - 115
Perchlorate Isotope Ratio		2.8				-
Perchlorate-101	0.200	.219	ug/L	109		85 - 115
Perchlorate-O(18)		.455	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): 2017-2664

Extract Batch Code: 1698687

Date Extracted: 06-SEP-17

GEL MS/PS ID: 1203870073

Client ID: CAPA-17-142931

GEL MSD/PSD ID: 1203870074

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	0.750	ug/L	0.943	96	1	125	6	30	75 - 125
Perchlorate Isotope Ratio	0	2.88		2.68		2.89		8		-
Perchlorate-101	0.200	0.756	ug/L	1.02	133 *	1.01	125	2	30	75 - 125
Perchlorate-O(18)	0	0.470	ug/L	0.445		.45		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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 06-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 1203870071Date Filtered: 06-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	06-SEP-17 20:26	per0906025a
	Perchlorate Isotope Ratio						1	06-SEP-17 20:26	per0906025a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	06-SEP-17 20:26	per0906025a
	Perchlorate-O(18)			0.495	ug/L		1	06-SEP-17 20:26	per0906025a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 06-SEP-17GEL Job No (SDG): 2017-2664GEL Sample ID: 1203870072Date Filtered: 06-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	0.211	ug/L		1	06-SEP-17 20:35	per0906026a
	Perchlorate Isotope Ratio			2.8			1	06-SEP-17 20:35	per0906026a
14797-73-0	Perchlorate-101	.05	.2	0.219	ug/L		1	06-SEP-17 20:35	per0906026a
	Perchlorate-O(18)			0.455	ug/L		1	06-SEP-17 20:35	per0906026a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-2664GEL Sample ID: 1203870076Date Filtered: 06-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	0.242	ug/L		1	06-SEP-17 20:44	per0906027a
	Perchlorate Isotope Ratio			2.94			1	06-SEP-17 20:44	per0906027a
14797-73-0	Perchlorate-101	.05	.2	0.239	ug/L		1	06-SEP-17 20:44	per0906027a
	Perchlorate-O(18)			0.451	ug/L		1	06-SEP-17 20:44	per0906027a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142931MSDate Received: 31-AUG-17GEL Job No (SDG): 2017-2664GEL Sample ID: 1203870073Date Filtered: 06-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	0.943	ug/L		1	06-SEP-17 21:02	per0906029a
	Perchlorate Isotope Ratio			2.68			1	06-SEP-17 21:02	per0906029a
14797-73-0	Perchlorate-101	.05	.2	1.02	ug/L		1	06-SEP-17 21:02	per0906029a
	Perchlorate-O(18)			0.445	ug/L		1	06-SEP-17 21:02	per0906029a

^ 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: 1698687Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-17-142931MSDDate Received: 31-AUG-17GEL Job No (SDG): 2017-2664GEL Sample ID: 1203870074Date Filtered: 06-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	1.00	ug/L		1	06-SEP-17 21:11	per0906030a
	Perchlorate Isotope Ratio			2.89			1	06-SEP-17 21:11	per0906030a
14797-73-0	Perchlorate-101	.05	.2	1.01	ug/L		1	06-SEP-17 21:11	per0906030a
	Perchlorate-O(18)			0.450	ug/L		1	06-SEP-17 21:11	per0906030a

^ 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 #: 2017-2664
Work Order #: 432105**

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: 1698678

Prep Batch Number: 1698677

Sample Analysis

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

Sample ID	Client ID
432105002	CAWA-17-142889
432105005	CAPA-17-142934
432105007	CAPA-17-142968
432105010	CAWA-17-142916
1203870022	Method Blank (MB)
1203870023	Laboratory Control Sample (LCS)
1203870024	432041003(CAWA-17-142902) Matrix Spike (MS)
1203870025	432041003(CAWA-17-142902) 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 continuing calibration verification standards (CCV) have not met requirements of 80-120% for 432105002 (CAWA-17-142889) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. A LLOQ level standard was analyzed following the biased low CCV with all target analytes meeting acceptance limits. Since the target analyte was not detected in the associated samples, the data are reported.

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 432041003 (CAWA-17-142902) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

One or more of the required spiking analytes were not within the acceptance limits in 1203870024 (CAWA-17-142902MS). RDX was recovered at 47% (57-125%). The biased low recovery was attributed to over range concentration of the target analyte in the parent sample, 432041003 (CAWA-17-142902).

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD (See Below) were not within the acceptance limits. Since all other RPD values met acceptance criteria, the noted exceptions are attributed to vagaries in the extraction process. The data are reported.

Sample	Analyte	Value
1203870024MS and 1203870025MSD (CAWA-17-142902)	2,6-Diamino-4-nitrotoluene	48* (0%-30%)

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. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

Sample Re-extraction/Re-analysis

Sample 432105002 (CAWA-17-142889) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

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: 2017-2664 GEL Work Order: 432105

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: Michael Penny

Date: 21 SEP 2017

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142889

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105002

Sample Amount 910 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907062.wiff

Date Analyzed: 08-SEP-17 21:49

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.0879	U	0.0879	0.275
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.0879	U	0.0879	0.275
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.0879	U	0.0879	0.275
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.0879	U	0.0879	0.275
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.0879	U	0.0879	0.275
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.0879	U	0.0879	0.275
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.0879	U	0.0879	0.549
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.0879	U	0.0879	0.275
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.0879	U	0.0879	0.275
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.0879	U	0.0879	0.275
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.0879	U	0.0879	0.275
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.0879	U	0.0879	0.275
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.0879	U	0.0879	0.275
<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-17-142889

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105002

Sample Amount 910 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.0879	U	0.0879	0.275
99-65-0	<i>m-Dinitrobenzene</i>				
88-72-2	o-Nitrotoluene	.0901	U	0.0901	0.275
88-72-2	<i>o-Nitrotoluene</i>				
78-11-5	PETN	.11	U	0.110	0.549
78-11-5	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.165	U	0.165	0.549
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	.33	U	0.330	1.10
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	.33	U	0.330	1.10
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	.33	U	0.330	1.10
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	.549	U	0.549	2.75
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	.549	U	0.549	2.75
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	.876		0.0879	0.275
121-82-4	<i>RDX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142934

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105005

Sample Amount 930 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907033.wiff

Date Analyzed: 08-SEP-17 04:40

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.086	U	0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.086	U	0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.086	U	0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.086	U	0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.086	U	0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.086	U	0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.086	U	0.086	0.538
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.086	U	0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.086	U	0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.086	U	0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.086	U	0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.086	U	0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.086	U	0.086	0.269
<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-17-142934

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105005

Sample Amount 930 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.086	U	0.086	0.269
99-65-0	<i>m-Dinitrobenzene</i>				
88-72-2	o-Nitrotoluene	.0882	U	0.0882	0.269
88-72-2	<i>o-Nitrotoluene</i>				
78-11-5	PETN	.108	U	0.108	0.538
78-11-5	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.161	U	0.161	0.538
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	.323	U	0.323	1.08
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	.323	U	0.323	1.08
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	.323	U	0.323	1.08
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	.538	U	0.538	2.69
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	.538	U	0.538	2.69
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	3.08		0.086	0.269
121-82-4	<i>RDX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-17-142968

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105007

Sample Amount 960 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907034.wiff

Date Analyzed: 08-SEP-17 05:15

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.0833	U	0.0833	0.260
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.0833	U	0.0833	0.260
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.0833	U	0.0833	0.260
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.0833	U	0.0833	0.260
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.0833	U	0.0833	0.260
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.0833	U	0.0833	0.260
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.0833	U	0.0833	0.521
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.0833	U	0.0833	0.260
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.0833	U	0.0833	0.260
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.0833	U	0.0833	0.260
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.0833	U	0.0833	0.260
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.0833	U	0.0833	0.260
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.0833	U	0.0833	0.260
<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-17-142968

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105007

Sample Amount 960 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.0833	U	0.0833	0.260
99-65-0	<i>m-Dinitrobenzene</i>				
88-72-2	o-Nitrotoluene	.0854	U	0.0854	0.260
88-72-2	<i>o-Nitrotoluene</i>				
78-11-5	PETN	.104	U	0.104	0.521
78-11-5	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.156	U	0.156	0.521
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	.313	U	0.313	1.04
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	.313	U	0.313	1.04
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	.313	U	0.313	1.04
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	.521	U	0.521	2.60
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	.521	U	0.521	2.60
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	3.09		0.0833	0.260
121-82-4	<i>RDX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142916

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105010

Sample Amount 930 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907035.wiff

Date Analyzed: 08-SEP-17 05:51

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.086	U	0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.086	U	0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.086	U	0.086	0.269
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.086	U	0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.086	U	0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.086	U	0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.086	U	0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
479-45-8	Tetryl	.086	U	0.086	0.538
<i>479-45-8</i>	<i>Tetryl</i>				
5755-27-1	MNX	.086	U	0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.086	U	0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.086	U	0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
98-95-3	Nitrobenzene	.086	U	0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.086	U	0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142916

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 432105010

Sample Amount 930 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-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	.086	U	0.086	0.269
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.086	U	0.086	0.269
99-65-0	m-Dinitrobenzene				
88-72-2	o-Nitrotoluene	.0882	U	0.0882	0.269
88-72-2	o-Nitrotoluene				
78-11-5	PETN	.108	U	0.108	0.538
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.161	U	0.161	0.538
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	.323	U	0.323	1.08
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	.323	U	0.323	1.08
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	.323	U	0.323	1.08
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	.538	U	0.538	2.69
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	.538	U	0.538	2.69
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):** 2017-2664**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
432105002	CAWA-17-142889	87	55 - 115	
432105005	CAPA-17-142934	97	55 - 115	
432105007	CAPA-17-142968	85	55 - 115	
432105010	CAWA-17-142916	90	55 - 115	
1203870022	MB for batch 1698677	86	55 - 115	
1203870023	LCS for batch 1698677	86	55 - 115	
1203870024	CAWA-17-142902MS	88	55 - 115	
1203870025	CAWA-17-142902MSD	93	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) 2017-2664

Extract Batch Code: 1698677

Date Extracted: 06-SEP-17

GEL LCS ID: 1203870023

GEL LCSDUP ID: .

Analysis Date/Time: 08-SEP-17 01:07

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	4.32	86					70 - 110
2,4,6-Trinitrotoluene	5	4.24	85					69 - 113
2,4-Diamino-6-nitrotoluene	5	3.74	75					50 - 121
2,4-Dinitrotoluene	5	4.05	81					71 - 110
2,6-Diamino-4-nitrotoluene	5	4.23	85					53 - 127
2,6-Dinitrotoluene	5	4.01	80					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.24	85					70 - 112
3,5-Dinitroaniline	5	4.15	83					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.09	82					74 - 116
DNX	.5	.458	92					65 - 113
HMX	5	4.23	85					58 - 113
MNX	.5	.485	97					66 - 114
Nitrobenzene	5	4.1	82					64 - 115
PETN	5	4.11	82					57 - 126
RDX	5	3.72	74					64 - 117
TATB	1.25	1.14	91					47 - 135
TNX	.5	.423	85					51 - 110
Tetryl	5	4.75	95					55 - 122
m-Dinitrobenzene	5	4.71	94					74 - 117
m-Nitrotoluene	5	3.98	80					66 - 114
o-Nitrotoluene	5	3.6	72					64 - 115
p-Nitrotoluene	5	4.24	85					66 - 127
tris(o-cresyl) phosphate	5	3.78	76					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: CAWA-17-142902

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Extract Batch Code: 1698677

Date Extracted: 06-SEP-17

GEL Spike ID: 1203870024

GEL SpikeDup ID: 1203870025

Analysis Date/Time: 08-SEP-17 02:53

MSD Analysis Date/Time: 08-SEP-17 03:29

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
1,3,5-Trinitrobenzene	5.43478	0	4.8	88	4.35	80	10	30	67 - 111
2,4,6-Trinitrotoluene	5.43478	.0897	4.68	85	4.85	88	3	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.43478	0	4.17	77	4.71	87	12	30	50 - 121
2,4-Dinitrotoluene	5.43478	.0412	4.76	87	5.08	93	7	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.43478	0	3.94	72	6.44	118	48 *	30	53 - 127
2,6-Dinitrotoluene	5.43478	0	4.51	83	4.57	84	1	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.43478	.372	5.18	88	5.25	90	1	30	67 - 115
3,5-Dinitroaniline	5.43478	.095	4.75	86	5.04	91	6	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.43478	.358	4.9	84	4.88	83	0	30	65 - 120
DNX	.54348	0	.523	96	.495	91	5	30	53 - 124
HMX	5.43478	1.23	6.14	90	5.68	82	8	30	44 - 128
MXN	.54348	.12	.641	96	.588	86	9	30	60 - 121
Nitrobenzene	5.43478	0	3.82	70	3.94	73	3	30	62 - 116
PETN	5.43478	0	4.44	82	4.69	86	5	30	51 - 131
RDX	5.43478	20	21.4	59	20.7	47 *	3	30	57 - 125
TATB	1.3587	0	1.28	95	1.3	96	2	30	38 - 149
TNX	.54348	0	.54	99	.496	91	8	30	46 - 120
Tetryl	5.43478	0	5	92	4.69	86	6	30	50 - 126
m-Dinitrobenzene	5.43478	0	5.08	93	4.67	86	8	30	74 - 117
m-Nitrotoluene	5.43478	0	3.83	71	4.02	74	5	30	59 - 120
o-Nitrotoluene	5.43478	0	4.35	80	4.42	81	2	30	56 - 119
p-Nitrotoluene	5.43478	0	5.13	94	4.85	89	5	30	61 - 129
tris(o-cresyl) phosphate	5.43478	0	3.62	67	3.38	62	7	30	38 - 105

#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 1698677

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870022

Sample Amount 1000 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907026.wiff

Date Analyzed: 08-SEP-17 00:31

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 1698677

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870022

Sample Amount 1000 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-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 1698677

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870023

Sample Amount 1000 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907027.wiff

Date Analyzed: 08-SEP-17 01:07

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.423		0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
80251-29-2	DNX	.458		0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
5755-27-1	MNX	.485		0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
3058-38-6	TATB	1.14		0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
88-72-2	o-Nitrotoluene	3.6		0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
121-82-4	RDX	3.72		0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	3.74		0.500	2.50
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
78-30-8	tris(o-cresyl) phosphate	3.78		0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
99-08-1	m-Nitrotoluene	3.98		0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.01		0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.05		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.09		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
98-95-3	Nitrobenzene	4.1		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1698677

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870023

Sample Amount 1000 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	4.11		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
618-87-1	3,5-Dinitroaniline	4.15		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	4.23		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.23		0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.24		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.24		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.24		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.32		0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	4.71		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	4.75		0.080	0.500
<i>479-45-8</i>	<i>Tetryl</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142902(432041003MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870024

Sample Amount 920 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907030.wiff

Date Analyzed: 08-SEP-17 02:53

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	.523		0.087	0.272
80251-29-2	DNX				
13980-04-6	TNX	.54		0.087	0.272
13980-04-6	TNX				
5755-27-1	MXN	.641		0.087	0.272
5755-27-1	MXN				
3058-38-6	TATB	1.28		0.326	1.09
3058-38-6	TATB				
78-30-8	tris(o-cresyl) phosphate	3.62		0.326	1.09
78-30-8	tris(o-cresyl) phosphate				
98-95-3	Nitrobenzene	3.82		0.087	0.272
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	3.83		0.087	0.272
99-08-1	m-Nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	3.94		0.543	2.72
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.17		0.543	2.72
6629-29-4	2,4-Diamino-6-nitrotoluene				
88-72-2	o-Nitrotoluene	4.35		0.0891	0.272
88-72-2	o-Nitrotoluene				
78-11-5	PETN	4.44		0.109	0.543
78-11-5	PETN				
606-20-2	2,6-Dinitrotoluene	4.51		0.087	0.272
606-20-2	2,6-Dinitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	4.68		0.087	0.272
118-96-7	2,4,6-Trinitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142902(432041003MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870024

Sample Amount 920 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
618-87-1 <i>618-87-1</i>	3,5-Dinitroaniline <i>3,5-Dinitroaniline</i>	4.75		0.326	1.09
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	4.76		0.087	0.272
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.8		0.087	0.272
19406-51-0 <i>19406-51-0</i>	4-Amino-2,6-dinitrotoluene <i>4-Amino-2,6-dinitrotoluene</i>	4.9		0.087	0.272
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	5		0.087	0.543
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	5.08		0.087	0.272
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	5.13		0.163	0.543
35572-78-2 <i>35572-78-2</i>	2-Amino-4,6-dinitrotoluene <i>2-Amino-4,6-dinitrotoluene</i>	5.18		0.087	0.272
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	6.14		0.087	0.272
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	21.4		0.087	0.272

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142902(432041003MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870025

Sample Amount 920 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0907031.wiff

Date Analyzed: 08-SEP-17 03:29

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	.495		0.087	0.272
80251-29-2	DNX				
13980-04-6	TNX	.496		0.087	0.272
13980-04-6	TNX				
5755-27-1	MNX	.588		0.087	0.272
5755-27-1	MNX				
3058-38-6	TATB	1.3		0.326	1.09
3058-38-6	TATB				
78-30-8	tris(o-cresyl) phosphate	3.38		0.326	1.09
78-30-8	tris(o-cresyl) phosphate				
98-95-3	Nitrobenzene	3.94		0.087	0.272
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	4.02		0.087	0.272
99-08-1	m-Nitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	4.35		0.087	0.272
99-35-4	1,3,5-Trinitrobenzene				
88-72-2	o-Nitrotoluene	4.42		0.0891	0.272
88-72-2	o-Nitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.57		0.087	0.272
606-20-2	2,6-Dinitrotoluene				
99-65-0	m-Dinitrobenzene	4.67		0.087	0.272
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	4.69		0.087	0.543
479-45-8	Tetryl				
78-11-5	PETN	4.69		0.109	0.543
78-11-5	PETN				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-142902(432041003MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-2664

Matrix: WATER

GEL Sample ID: 1203870025

Sample Amount 920 mL

Date Received: 02-SEP-17

Moisture: .

Extraction Batch ID: 1698677

Extraction Type Sol Exchange

Date Extracted: 06-SEP-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
6629-29-4	2,4-Diamino-6-nitrotoluene	4.71		0.543	2.72
6629-29-4	2,4-Diamino-6-nitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	4.85		0.087	0.272
118-96-7	2,4,6-Trinitrotoluene				
99-99-0	p-Nitrotoluene	4.85		0.163	0.543
99-99-0	p-Nitrotoluene				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.88		0.087	0.272
19406-51-0	4-Amino-2,6-dinitrotoluene				
618-87-1	3,5-Dinitroaniline	5.04		0.326	1.09
618-87-1	3,5-Dinitroaniline				
121-14-2	2,4-Dinitrotoluene	5.08		0.087	0.272
121-14-2	2,4-Dinitrotoluene				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.25		0.087	0.272
35572-78-2	2-Amino-4,6-dinitrotoluene				
2691-41-0	HMX	5.68		0.087	0.272
2691-41-0	HMX				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.44		0.543	2.72
59229-75-3	2,6-Diamino-4-nitrotoluene				
121-82-4	RDX	20.7		0.087	0.272
121-82-4	RDX				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 07-SEP-17 09:45GEL Data File: EXP0907001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	376.91
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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-2664Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 07-SEP-17 10:20GEL Data File: EXP0907002.wiffInstrument ID: LCMSMS5Column: 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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 07-SEP-17 15:04

GEL Data File: EXP0907010.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 07-SEP-17 17:26

GEL Data File: EXP0907014.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 07-SEP-17 22:09

GEL Data File: EXP0907022.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 07-SEP-17 23:20

GEL Data File: EXP0907024.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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 08-SEP-17 07:02

GEL Data File: EXP0907037.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 08-SEP-17 12:56

GEL Data File: EXP0907047.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
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
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 08-SEP-17 14:07

GEL Data File: EXP0907049.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 08-SEP-17 15:54

GEL Data File: EXP0907052.wiff

Instrument ID: LCMSMS5

Column: 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	5.61
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 08-SEP-17 17:40

GEL Data File: EXP0907055.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK11

Analysis Date: 08-SEP-17 18:16

GEL Data File: EXP0907056.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK12

Analysis Date: 08-SEP-17 19:27

GEL Data File: EXP0907058.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK13

Analysis Date: 08-SEP-17 20:38

GEL Data File: EXP0907060.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
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK14

Analysis Date: 08-SEP-17 22:59

GEL Data File: EXP0907064.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK15

Analysis Date: 09-SEP-17 03:08

GEL Data File: EXP0907071.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): 2017-2664

Lab Code: GEL

Lab Sample ID: XIBLK16

Analysis Date: 09-SEP-17 04:19

GEL Data File: EXP0907073.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

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-2664
Work Order #: 432105

Sample ID	Client ID
432105001	CAWA-17-142854
432105002	CAWA-17-142889
432105004	CAPA-17-142932
432105005	CAPA-17-142934
432105006	CAPA-17-142963
432105007	CAPA-17-142968
432105009	CAWA-17-142881
432105010	CAWA-17-142916
1203869087	Method Blank (MB) ICP
1203869088	Laboratory Control Sample (LCS)
1203869091	432105001(CAWA-17-142854L) Serial Dilution (SD)
1203869089	432105001(CAWA-17-142854D) Sample Duplicate (DUP)
1203869090	432105001(CAWA-17-142854S) Matrix Spike (MS)
1203869052	Method Blank (MB) ICP-MS
1203869053	Laboratory Control Sample (LCS)
1203869056	432105001(CAWA-17-142854L) Serial Dilution (SD)
1203869054	432105001(CAWA-17-142854D) Sample Duplicate (DUP)
1203869055	432105001(CAWA-17-142854S) Matrix Spike (MS)
1203877126	Method Blank (MB) CVAA
1203877127	Laboratory Control Sample (LCS)
1203877132	432105001(CAWA-17-142854L) Serial Dilution (SD)
1203877128	432105001(CAWA-17-142854D) Sample Duplicate (DUP)
1203877130	432105001(CAWA-17-142854S) Matrix Spike (MS)

Sample Analysis

Samples 432105001,002,004,005,006,007,009 and 010 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1698294, 1698277, 1701447 and 1703555
Prep Batch :	1698293, 1698276 and 1701439
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 PE 7300 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 CRDL/PQL standard recoveries met the referenced advisory control limits.

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: 432105001 (CAWA-17-142854)-ICP, ICP-MS and 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

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. Samples were diluted to ensure that the silica concentrations were within the linear calibration range of the instrument. 432105001 (CAWA-17-142854), 432105004 (CAPA-17-142932), 432105006 (CAPA-17-142963) and 432105009 (CAWA-17-142881)-ICP.

Analyte	432105			
	001	004	006	009
Silica	10X	10X	10X	10X

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: 2017-2664 GEL Work Order: 432105

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: 28 SEP 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105001**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142854**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:28	091917W1-11	1701447

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432105001

BASIS: As Received

DATE COLLECTED 31-AUG-17

CLIENT ID: CAWA-17-142854

LEVEL: Low

DATE RECEIVED 02-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	136	ug/L	J	68	200	200	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/18/17 12:49	170918-3	1698277
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-39-3	Barium	45.4	ug/L		1	5	5	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-70-2	Calcium	14400	ug/L		50	200	200	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-50-8	Copper	3.54	ug/L	J	3	10	10	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7439-89-6	Iron	61.2	ug/L	J	30	100	100	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7439-95-4	Magnesium	4700	ug/L		110	300	300	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7439-98-7	Molybdenum	0.835	ug/L		0.2	0.5	0.5	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-02-0	Nickel	2.14	ug/L		0.6	2	2	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-09-7	Potassium	2670	ug/L		50	150	150	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7631-86-9	Silica	41100	ug/L		530	2130	2130	10	P	JWJ	09/15/17 13:52	091517-1	1698294
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-23-5	Sodium	14600	ug/L		100	300	300	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-24-6	Strontium	88.8	ug/L		1	5	5	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-61-1	Uranium	0.505	ug/L		0.067	0.2	0.2	1	MS	BAJ	09/18/17 20:05	170918-10	1698277
7440-62-2	Vanadium	3.09	ug/L	J	1	5	5	1	P	JWJ	09/14/17 22:00	091417A-2	1698294
7440-66-6	Zinc	8.96	ug/L	J	3.3	10	10	1	P	JWJ	09/14/17 22:00	091417A-2	1698294

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432105001**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142854**LEVEL:** Low**DATE RECEIVED** 02-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	55.3	mg/L		0.453	1.24	1.24	1		TXT1	09/25/17 13:20		1703555

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1698277	1698276	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1698294	1698293	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105002**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142889**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:40	091917W1-11	1701447

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105004**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142932**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:42	091917W1-11	1701447

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432105004

BASIS: As Received

DATE COLLECTED 31-AUG-17

CLIENT ID: CAPA-17-142932

LEVEL: Low

DATE RECEIVED 02-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	JWJ	09/14/17 22:13	091417A-2	1698294
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/18/17 12:54	170918-3	1698277
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-39-3	Barium	18.3	ug/L		1	5	5	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-70-2	Calcium	9700	ug/L		50	200	200	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7439-95-4	Magnesium	3140	ug/L		110	300	300	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7439-98-7	Molybdenum	0.563	ug/L		0.2	0.5	0.5	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-09-7	Potassium	1130	ug/L		50	150	150	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7631-86-9	Silica	55200	ug/L		530	2130	2130	10	P	JWJ	09/15/17 14:07	091517-1	1698294
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-23-5	Sodium	8140	ug/L		100	300	300	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-24-6	Strontium	46	ug/L		1	5	5	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-61-1	Uranium	0.424	ug/L		0.067	0.2	0.2	1	MS	BAJ	09/18/17 20:17	170918-10	1698277
7440-62-2	Vanadium	2.4	ug/L	J	1	5	5	1	P	JWJ	09/14/17 22:13	091417A-2	1698294
7440-66-6	Zinc	4.96	ug/L	J	3.3	10	10	1	P	JWJ	09/14/17 22:13	091417A-2	1698294

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432105004**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142932**LEVEL:** Low**DATE RECEIVED** 02-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	37.2	mg/L		0.453	1.24	1.24	1		TXT1	09/25/17 13:20		1703555

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1698277	1698276	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1698294	1698293	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105005**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142934**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:43	091917W1-11	1701447

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105006**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142963**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:45	091917W1-11	1701447

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432105006

BASIS: As Received

DATE COLLECTED 31-AUG-17

CLIENT ID: CAPA-17-142963

LEVEL: Low

DATE RECEIVED 02-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	JWJ	09/14/17 22:17	091417A-2	1698294
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/18/17 12:55	170918-3	1698277
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-39-3	Barium	18.2	ug/L		1	5	5	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-70-2	Calcium	9570	ug/L		50	200	200	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7439-95-4	Magnesium	3090	ug/L		110	300	300	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7439-98-7	Molybdenum	0.550	ug/L		0.2	0.5	0.5	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-02-0	Nickel	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-09-7	Potassium	1130	ug/L		50	150	150	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7631-86-9	Silica	55500	ug/L		530	2130	2130	10	P	JWJ	09/15/17 14:10	091517-1	1698294
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-23-5	Sodium	8030	ug/L		100	300	300	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-24-6	Strontium	45.4	ug/L		1	5	5	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-61-1	Uranium	0.420	ug/L		0.067	0.2	0.2	1	MS	BAJ	09/18/17 20:20	170918-10	1698277
7440-62-2	Vanadium	2.23	ug/L	J	1	5	5	1	P	JWJ	09/14/17 22:17	091417A-2	1698294
7440-66-6	Zinc	5.66	ug/L	J	3.3	10	10	1	P	JWJ	09/14/17 22:17	091417A-2	1698294

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432105006**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142963**LEVEL:** Low**DATE RECEIVED** 02-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	36.6	mg/L		0.453	1.24	1.24	1		TXT1	09/25/17 13:20		1703555

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1698277	1698276	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1698294	1698293	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105007**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAPA-17-142968**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:47	091917W1-11	1701447

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105009**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142881**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:48	091917W1-11	1701447

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 432105009

BASIS: As Received

DATE COLLECTED 31-AUG-17

CLIENT ID: CAWA-17-142881

LEVEL: Low

DATE RECEIVED 02-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	JWJ	09/14/17 22:20	091417A-2	1698294
7440-36-0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	09/18/17 12:57	170918-3	1698277
7440-38-2	Arsenic	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-39-3	Barium	6.73	ug/L		1	5	5	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-41-7	Beryllium	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-42-8	Boron	15	ug/L	U	15	50	50	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-43-9	Cadmium	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-70-2	Calcium	7380	ug/L		50	200	200	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-47-3	Chromium	3	ug/L	U	3	10	10	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-48-4	Cobalt	1	ug/L	U	1	5	5	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-50-8	Copper	3	ug/L	U	3	10	10	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7439-89-6	Iron	30	ug/L	U	30	100	100	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7439-92-1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7439-95-4	Magnesium	2740	ug/L		110	300	300	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7439-96-5	Manganese	2	ug/L	U	2	10	10	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7439-98-7	Molybdenum	1.03	ug/L		0.2	0.5	0.5	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-02-0	Nickel	0.654	ug/L	J	0.6	2	2	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-09-7	Potassium	2100	ug/L		50	150	150	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7782-49-2	Selenium	2	ug/L	U	2	5	5	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7631-86-9	Silica	52100	ug/L		530	2130	2130	10	P	JWJ	09/15/17 14:14	091517-1	1698294
7440-22-4	Silver	0.30	ug/L	U	0.3	1	1	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-23-5	Sodium	7940	ug/L		100	300	300	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-24-6	Strontium	42.2	ug/L		1	5	5	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-28-0	Thallium	0.60	ug/L	U	0.6	2	2	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-31-5	Tin	2.5	ug/L	U	2.5	10	10	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-61-1	Uranium	0.313	ug/L		0.067	0.2	0.2	1	MS	BAJ	09/18/17 20:22	170918-10	1698277
7440-62-2	Vanadium	7.54	ug/L		1	5	5	1	P	JWJ	09/14/17 22:20	091417A-2	1698294
7440-66-6	Zinc	10.4	ug/L		3.3	10	10	1	P	JWJ	09/14/17 22:20	091417A-2	1698294

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 432105009**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142881**LEVEL:** Low**DATE RECEIVED** 02-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	29.7	mg/L		0.453	1.24	1.24	1		TXT1	09/25/17 13:20		1703555

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1698277	1698276	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1698294	1698293	SW846 3005A	50	mL	50	mL	09/05/17	JXM8
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-2664**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 432105010**BASIS:** As Received**DATE COLLECTED** 31-AUG-17**CLIENT ID:** CAWA-17-142916**LEVEL:** Low**DATE RECEIVED** 02-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	09/19/17 10:50	091917W1-11	1701447

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1701447	1701439	EPA 245.1/245.2 Prep	20	mL	20	mL	09/18/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2017-2664

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>
1203869052	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
1203869087	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	100	ug/L	+/-300	U	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	5.39	ug/L	+/-10	J	P	3.3	10
1203877126	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. 2017-2664 Client ID: CAWA-17-142854S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 432105001 Spike ID: 1203869055

<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	50.9		1	U	50	101		MS
Arsenic	ug/L	75-125	54.5		2	U	50	106		MS
Cadmium	ug/L	75-125	53.3		0.3	U	50	107		MS
Chromium	ug/L	75-125	54.1		3	U	50	105		MS
Lead	ug/L	75-125	51.3		0.5	U	50	102		MS
Molybdenum	ug/L	75-125	55.4		0.835		50	109		MS
Nickel	ug/L	75-125	55.6		2.14		50	107		MS
Selenium	ug/L	75-125	52.9		2	U	50	105		MS
Silver	ug/L	75-125	54		0.3	U	50	108		MS
Thallium	ug/L	75-125	48.9		0.6	U	50	97.8		MS
Uranium	ug/L	75-125	52.5		0.505		50	104		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-2664 Client ID: CAWA-17-142854S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 432105001 Spike ID: 1203869090

<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>
Silica	ug/L	75-125	49800		41100		10700	81.8		P
Sodium	ug/L	75-125	18600		14600		5000	80.5		P
Strontium	ug/L	75-125	526		88.8		500	87.4		P
Tin	ug/L	75-125	454		2.5	U	500	90.5		P
Vanadium	ug/L	75-125	460		3.09	J	500	91.3		P
Zinc	ug/L	75-125	460		8.96	J	500	90.2		P
Aluminum	ug/L	75-125	4700		136	J	5000	91.2		P
Barium	ug/L	75-125	492		45.4		500	89.4		P
Beryllium	ug/L	75-125	450		1	U	500	90		P
Boron	ug/L	75-125	467		15	U	500	91.9		P
Calcium	ug/L	75-125	18200		14400		5000	76.4		P
Cobalt	ug/L	75-125	451		1	U	500	90.1		P
Copper	ug/L	75-125	463		3.54	J	500	91.9		P
Iron	ug/L	75-125	4670		61.2	J	5000	92.1		P
Magnesium	ug/L	75-125	9110		4700		5000	88.3		P
Manganese	ug/L	75-125	448		2	U	500	89.6		P
Potassium	ug/L	75-125	6890		2670		5000	84.4		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-2664 **Client ID:** CAWA-17-142854S**Contract:** ESHL00114 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 432105001 **Spike ID:** 1203877130

<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	2.12		0.067	U	2	106		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-2664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-142854D

Matrix: WATER

Level: Low

Sample ID: 432105001

Duplicate ID: 1203869054

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		2 U		2 U				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	0.835		0.763		9.01		MS
Nickel	ug/L	+/- 2	2.14		2.09		2.55		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	+/- .2	0.505		0.505		0		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-2664

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-142854D

Matrix: WATER

Level: Low

Sample ID: 432105001

Duplicate ID: 1203869089

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	136 J		121 J		12.2		P
Barium	ug/L	+/-20%	45.4		45.7		.788		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15 U		15 U				P
Calcium	ug/L	+/-20%	14400		14600		1.23		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L	+/-10	3.54 J		3.17 J		11.2		P
Iron	ug/L	+/-100	61.2 J		67.5 J		9.74		P
Magnesium	ug/L	+/-20%	4700		4730		.704		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	2670		2580		3.7		P
Silica	ug/L	+/-20%	41100		42300		2.99		P
Sodium	ug/L	+/-20%	14600		14700		1.08		P
Strontium	ug/L	+/-20%	88.8		89.8		1.14		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	3.09 J		3.3 J		6.59		P
Zinc	ug/L	+/-10	8.96 J		8.5 J		5.25		P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2017-2664**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAWA-17-142854D**Matrix:** WATER**Level:** Low**Sample ID:** 432105001**Duplicate ID:** 1203877128**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

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Laboratory Control Sample Summary

SDG NO. 2017-2664

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>
1203869053								
	Antimony	ug/L	50	48.8		97.5	80-120	MS
	Arsenic	ug/L	50	53.6		107	80-120	MS
	Cadmium	ug/L	50	53.1		106	80-120	MS
	Chromium	ug/L	50	48.2		96.4	80-120	MS
	Lead	ug/L	50	52.1		104	80-120	MS
	Molybdenum	ug/L	50	53.4		107	80-120	MS
	Nickel	ug/L	50	52.4		105	80-120	MS
	Selenium	ug/L	50	53.8		108	80-120	MS
	Silver	ug/L	50	54.1		108	80-120	MS
	Thallium	ug/L	50	50		100	80-120	MS
	Uranium	ug/L	50	51.4		103	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 2017-2664

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>
1203869088								
	Vanadium	ug/L	500	474		94.9	80-120	P
	Zinc	ug/L	500	483		96.6	80-120	P
	Tin	ug/L	500	477		95.5	80-120	P
	Aluminum	ug/L	5000	4940		98.7	80-120	P
	Barium	ug/L	500	474		94.9	80-120	P
	Beryllium	ug/L	500	466		93.3	80-120	P
	Boron	ug/L	500	474		94.7	80-120	P
	Calcium	ug/L	5000	4920		98.5	80-120	P
	Cobalt	ug/L	500	482		96.3	80-120	P
	Copper	ug/L	500	482		96.5	80-120	P
	Iron	ug/L	5000	4880		97.5	80-120	P
	Magnesium	ug/L	5000	4940		98.8	80-120	P
	Manganese	ug/L	500	480		96	80-120	P
	Potassium	ug/L	5000	4830		96.7	80-120	P
	Silica	ug/L	10700	9700		90.6	80-120	P
	Sodium	ug/L	5000	4980		99.7	80-120	P
	Strontium	ug/L	500	478		95.5	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-2664

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>
1203877127	Mercury	ug/L	2	2.17		108	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-2664 Client ID: CAWA-17-142854L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 432105001 Serial Dilution ID: 1203869056

<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	U	10	U				MS
Cadmium	.3	U	1.5	U				MS
Chromium	3	U	15	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.835		1	U	.599			MS
Nickel	2.14		3	U	1.073			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.505		.53	J	4.95			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-2664

Client ID: CAWA-17-142854L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 432105001

Serial Dilution ID: 1203869091

<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	136	J	340	U	7.896			P
Barium	45.4		46.6		2.782			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	14400		14900		3.103		10	P
Cobalt	1	U	5	U				P
Copper	3.54	J	15	U	82.879			P
Iron	61.2	J	150	U	43.268			P
Magnesium	4700		4830		2.729			P
Manganese	2	U	10	U				P
Potassium	2670		2730		2.18		10	P
Silica	4110		4380		6.669		10	P
Sodium	14600		15300		4.882		10	P
Strontium	88.8		91.9		3.471		10	P
Tin	2.5	U	12.5	U				P
Vanadium	3.09	J	5	U	20.28			P
Zinc	8.96	J	16.5	U	58.908			P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-2664 **Client ID:** CAWA-17-142854L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 432105001 **Serial Dilution ID:** 1203877132

<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 #: 2017-2664
Work Order #: 432105**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1699093

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
432105002	CAWA-17-142889
432105005	CAPA-17-142934
432105007	CAPA-17-142968
432105010	CAWA-17-142916
1203871102	Method Blank (MB)
1203871103	Laboratory Control Sample (LCS)
1203871104	431769002(NonSDG) Sample Duplicate (DUP)
1203871105	432105005(CAPA-17-142934) Sample Duplicate (DUP)
1203871107	431769002(NonSDG) Post Spike (PS)
1203871108	432105005(CAPA-17-142934) 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

Samples 431769002 (NonSDG) and 432105005 (CAPA-17-142934) were 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 following samples 1203871104 (Non SDG 431769002DUP) and 1203871107 (Non SDG 431769002PS) in this sample group were diluted due to matrix interference. 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.

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:	1697937	Method:	WSP-CN(T)
Prep Batch :	1697936	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
432105002	CAWA-17-142889
432105005	CAPA-17-142934
432105007	CAPA-17-142968
432105010	CAWA-17-142916
1203868313	Method Blank (MB)
1203868314	Laboratory Control Sample (LCS)
1203868315	432041003(CAWA-17-142902) Sample Duplicate (DUP)
1203868317	432041003(CAWA-17-142902) 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 432041003 (CAWA-17-142902) 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

Sample1203868315 (CAWA-17-142902DUP) 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: Ion Chromatography

Analytical Batch: 1699909

Method: WSP-ANIONS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:300.0:

Sample ID	Client ID
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203873010	Method Blank (MB)
1203873011	Laboratory Control Sample (LCS)
1203873012	432189001(CAWA-17-142859) Sample Duplicate (DUP)
1203873013	432189001(CAWA-17-142859) 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-3000 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 432189001 (CAWA-17-142859) 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 432105001 (CAWA-17-142854) 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	432105
	001
Chloride	5X

Sample Re-analysis

The samples in this SDG did not require re-analysis.

Miscellaneous Information**Manual Integrations**

Samples 1203873012 (CAWA-17-142859DUP), 432105001 (CAWA-17-142854), 432105004 (CAPA-17-142932), 432105006 (CAPA-17-142963) and 432105009 (CAWA-17-142881) 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: 1698259 **Method:** NH3
Prep Batch : 1698258 **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
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203868979	Method Blank (MB)
1203868980	Laboratory Control Sample (LCS)
1203868982	431850001(WST35-17-144903) Sample Duplicate (DUP)
1203868984	431850001(WST35-17-144903) 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-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 431850001 (WST35-17-144903) 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:

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Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1698267	Method:	TKN
Prep Batch :	1698266	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
432105002	CAWA-17-142889
432105005	CAPA-17-142934
432105007	CAPA-17-142968
432105010	CAWA-17-142916
1203868999	Method Blank (MB)
1203869000	Laboratory Control Sample (LCS)
1203869002	431850001(WST35-17-144903) Sample Duplicate (DUP)
1203869006	431850001(WST35-17-144903) 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 431850001 (WST35-17-144903) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Nitrogen, Total Kjeldahl	1203869006 (WST35-17-144903MS)	128* (90.0%-110.0%)

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:

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Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1698270

Method: NO3NO2

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:353.2:

Sample ID	Client ID
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203869019	Method Blank (MB)
1203869020	Laboratory Control Sample (LCS)
1203869021	431850001(WST35-17-144903) Sample Duplicate (DUP)
1203869024	431850001(WST35-17-144903) 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 431850001 (WST35-17-144903) 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:

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Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1698273	Method:	PO4
Prep Batch :	1698272	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
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203869041	Method Blank (MB)
1203869042	Laboratory Control Sample (LCS)
1203869044	432105001(CAWA-17-142854) Sample Duplicate (DUP)
1203869046	432105001(CAWA-17-142854) 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-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 432105001 (CAWA-17-142854) 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

Sample1203869041 (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: 1698443

Method: TDS

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA:160.1:

Sample ID	Client ID
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203869513	Method Blank (MB)
1203869514	Laboratory Control Sample (LCS)
1203869517	432041001(CAWA-17-142867) 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 432041001 (CAWA-17-142867) 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	1203869517 (CAWA-17-142867DUP)	6.74* (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: 1701648

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
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203877744	Laboratory Control Sample (LCS)
1203877745	431853001(CAPA-17-142931) Sample Duplicate (DUP)
1203877746	432189001(CAWA-17-142859) 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

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

Samples 431853001 (CAPA-17-142931) and 432189001 (CAWA-17-142859) were 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: 1698844 **Method:** PH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 150.1 1982:

Sample ID	Client ID
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203870477	Laboratory Control Sample (LCS)
1203871261	432105009(CAWA-17-142881) 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 432105009 (CAWA-17-142881) 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
1203871261 (CAWA-17-142881DUP)	pH	Received 02-SEP-17, out of holding 31-AUG-17
432105001 (CAWA-17-142854)	pH	Received 02-SEP-17, out of holding 31-AUG-17
432105004 (CAPA-17-142932)	pH	Received 02-SEP-17, out of holding 31-AUG-17
432105006 (CAPA-17-142963)	pH	Received 02-SEP-17, out of holding 31-AUG-17
432105009 (CAWA-17-142881)	pH	Received 02-SEP-17, out of holding 31-AUG-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: 1698841 **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
432105001	CAWA-17-142854
432105004	CAPA-17-142932
432105006	CAPA-17-142963
432105009	CAWA-17-142881
1203870470	Laboratory Control Sample (LCS)
1203870473	432105009(CAWA-17-142881) Sample Duplicate (DUP)
1203870475	432105009(CAWA-17-142881) 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 432105009 (CAWA-17-142881) 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.

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Qualifier Definition Report for

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

Client SDG: 2017-2664 GEL Work Order: 432105

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: Kristen Mizzell

Date: 26 SEP 2017

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142854
Sample ID: 432105001
Matrix: W
Collect Date: 31-AUG-17 11:38
Receive Date: 02-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	09/13/17	0516	1699909	1
Fluoride	J	0.0746	0.033	0.100	mg/L		1					
Sulfate		5.21	0.133	0.400	mg/L		1					
Chloride		21.7	0.335	1.00	mg/L		5	MXL2	09/13/17	1940	1699909	2
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0832	0.017	0.050	mg/L	1.00	1	KLP1	09/05/17	1105	1698259	3
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.701	0.017	0.050	mg/L		1	AXH3	09/05/17	1039	1698270	4
PO4 "As Received"												
Phosphorus, Total as P		0.116	0.020	0.050	mg/L	1.00	1	KLP1	09/07/17	1210	1698273	5
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		129	3.40	14.3	mg/L			KLP1	09/06/17	1530	1698443	6
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		55.9	1.45	4.00	mg/L			RXB5	09/07/17	1639	1698841	7
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		216	1.00	1.00	umhos/cm		1	VH1	09/20/17	1510	1701648	8
PH "As Received"												
pH at Temp 11.0C	H	7.24	0.010	0.100	SU		1	RXB5	09/07/17	1653	1698844	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	09/05/17	0845	1698258
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/07/17	1000	1698272

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142854
Sample ID: 432105001

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142889
Sample ID: 432105002
Matrix: W
Collect Date: 31-AUG-17 11:38
Receive Date: 02-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	J	0.807	0.330	1.00	mg/L		1	TSM	09/13/17	0646	1699093	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/06/17	0822	1697937	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	09/06/17	1231	1698267	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/06/17	0712	1697936
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	09/05/17	1230	1698266

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAPA-17-142932
Sample ID: 432105004
Matrix: W
Collect Date: 31-AUG-17 13:13
Receive Date: 02-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	09/13/17	0545	1699909	1
Chloride		1.31	0.067	0.200	mg/L		1					
Fluoride	J	0.0416	0.033	0.100	mg/L		1					
Sulfate		2.09	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.227	0.017	0.050	mg/L	1.00	1	KLP1	09/05/17	1106	1698259	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.636	0.017	0.050	mg/L		1	AXH3	09/05/17	1040	1698270	3
PO4 "As Received"												
Phosphorus, Total as P		0.093	0.020	0.050	mg/L	1.00	1	KLP1	09/07/17	1218	1698273	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		92.9	3.40	14.3	mg/L			KLP1	09/06/17	1530	1698443	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	09/07/17	1641	1698841	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		124	1.00	1.00	umhos/cm		1	VH1	09/20/17	1510	1701648	7
PH "As Received"												
pH at Temp 11.0C	H	7.79	0.010	0.100	SU		1	RXB5	09/07/17	1653	1698844	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	09/05/17	0845	1698258
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/07/17	1000	1698272

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAPA-17-142932
Sample ID: 432105004

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

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

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Report Date: September 26, 2017

Company : Los Alamos National Laboratory
Address : TA-00, SM1237, Rm104C

Los Alamos, New Mexico 87545

Contact: Ms. Nita Patel

Client SDG: 2017-2664

Project: LANL- WQH Water Samples

Client Sample ID: CAPA-17-142934

Project: ESHL00114

Sample ID: 432105005

Client ID: ARSL004

Matrix: W

Collect Date: 31-AUG-17 13:13

Receive Date: 02-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	U	ND	0.330	1.00	mg/L		1	TSM	09/13/17	0756	1699093	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/06/17	0823	1697937	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	J	0.0581	0.033	0.100	mg/L	1.00	1	KLP1	09/06/17	1232	1698267	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/06/17	0712	1697936
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	09/05/17	1230	1698266

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAPA-17-142963
Sample ID: 432105006
Matrix: W
Collect Date: 31-AUG-17 13:13
Receive Date: 02-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	09/13/17	0614	1699909	1
Chloride		1.41	0.067	0.200	mg/L		1					
Fluoride	J	0.0518	0.033	0.100	mg/L		1					
Sulfate		2.10	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0874	0.017	0.050	mg/L	1.00	1	KLP1	09/05/17	1107	1698259	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.638	0.017	0.050	mg/L		1	AXH3	09/05/17	1041	1698270	3
PO4 "As Received"												
Phosphorus, Total as P		0.0936	0.020	0.050	mg/L	1.00	1	KLP1	09/07/17	1219	1698273	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		94.3	3.40	14.3	mg/L			KLP1	09/06/17	1530	1698443	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		53.7	1.45	4.00	mg/L			RXB5	09/07/17	1644	1698841	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		120	1.00	1.00	umhos/cm		1	VH1	09/20/17	1510	1701648	7
PH "As Received"												
pH at Temp 12.6C	H	7.83	0.010	0.100	SU		1	RXB5	09/07/17	1653	1698844	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	09/05/17	0845	1698258
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/07/17	1000	1698272

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAPA-17-142963
Sample ID: 432105006

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAPA-17-142968
Sample ID: 432105007
Matrix: W
Collect Date: 31-AUG-17 13:13
Receive Date: 02-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	J	0.365	0.330	1.00	mg/L		1	TSM	09/13/17	1016	1699093	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/06/17	0824	1697937	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	J	0.0649	0.033	0.100	mg/L	1.00	1	KLP1	09/06/17	1233	1698267	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/06/17	0712	1697936
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	09/05/17	1230	1698266

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142881
Sample ID: 432105009
Matrix: W
Collect Date: 31-AUG-17 13:58
Receive Date: 02-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	09/13/17	0644	1699909	1
Chloride		1.21	0.067	0.200	mg/L		1					
Fluoride	J	0.0387	0.033	0.100	mg/L		1					
Sulfate		1.17	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.0565	0.017	0.050	mg/L	1.00	1	KLP1	09/05/17	1108	1698259	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.402	0.017	0.050	mg/L		1	AXH3	09/05/17	1047	1698270	3
PO4 "As Received"												
Phosphorus, Total as P		0.104	0.020	0.050	mg/L	1.00	1	KLP1	09/07/17	1219	1698273	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		84.3	3.40	14.3	mg/L			KLP1	09/06/17	1530	1698443	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		48.5	1.45	4.00	mg/L			RXB5	09/07/17	1649	1698841	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		108	1.00	1.00	umhos/cm		1	VH1	09/20/17	1510	1701648	7
PH "As Received"												
pH at Temp 13.7C	H	7.76	0.010	0.100	SU		1	RXB5	09/07/17	1655	1698844	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	09/05/17	0845	1698258
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	09/07/17	1000	1698272

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142881
Sample ID: 432105009

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

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

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Certificate of Analysis

Report Date: September 26, 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: 2017-2664

Client Sample ID: CAWA-17-142916
Sample ID: 432105010
Matrix: W
Collect Date: 31-AUG-17 13:58
Receive Date: 02-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	09/13/17	1103	1699093	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	09/06/17	0829	1697937	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.127	0.033	0.100	mg/L	1.00	1	KLP1	09/06/17	1234	1698267	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	09/06/17	0712	1697936
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	09/05/17	1230	1698266

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

Quality Control Summary

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QC Summary

Report Date: September 26, 2017

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Los Alamos National Laboratory
TA-00, SM1237, Rm104C
Los Alamos, New Mexico

Contact: Ms. Nita Patel

Workorder: 432105

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1699093										
QC1203871104	431769002	DUP									
Total Organic Carbon Average		12.1		11.8	mg/L	2.14		(0%-20%)	TSM	09/12/17	22:10
QC1203871105	432105005	DUP									
Total Organic Carbon Average	U	ND	U	ND	mg/L	N/A				09/13/17	08:43
QC1203871103	LCS										
Total Organic Carbon Average	10.0			10.4	mg/L		104	(80%-120%)		09/12/17	21:35
QC1203871102	MB										
Total Organic Carbon Average			J	0.673	mg/L					09/12/17	21:23
QC1203871107	431769002	PS									
Total Organic Carbon Average	10.0		6.05	16.5	mg/L		105	(75%-125%)		09/12/17	22:33
QC1203871108	432105005	PS									
Total Organic Carbon Average	10.0	U	ND	10.9	mg/L		105	(75%-125%)		09/13/17	09:30
Flow Injection Analysis											
Batch	1697937										
QC1203868315	432041003	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	09/06/17	08:43
QC1203868314	LCS										
Cyanide, Total	50.0			51.7	ug/L		103	(90%-110%)		09/06/17	08:07
QC1203868313	MB										
Cyanide, Total			U	ND	ug/L					09/06/17	08:06
QC1203868317	432041003	MS									
Cyanide, Total	100	U	ND	97.2	ug/L		97.2	(90%-110%)		09/06/17	08:20

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QC Summary

Workorder: 432105

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1699909										
QC1203873012	432189001	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MXL2	09/13/17	09:11
Chloride			9.76		9.65	mg/L	1.14	(0%-20%)			
Fluoride			0.149		0.152	mg/L	2.33 ^	(+/-0.100)			
Sulfate			5.85		5.79	mg/L	1.06	(0%-20%)			
QC1203873011	LCS										
Bromide		1.25			1.22	mg/L	97.2	(80%-120%)		09/13/17	02:48
Chloride		5.00			4.78	mg/L	95.5	(80%-120%)			
Fluoride		2.50			2.38	mg/L	95.1	(80%-120%)			
Sulfate		10.0			9.61	mg/L	96.1	(80%-120%)			
QC1203873010	MB										
Bromide			U		ND	mg/L				09/13/17	02:19
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					
QC1203873013	432189001	PS									
Bromide		1.25	U		ND	1.32	mg/L	101	(75%-125%)	09/13/17	09:40
Chloride		5.00			9.76	15.3	mg/L	111	(75%-125%)		

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QC Summary

Workorder: 432105

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1699909										
Fluoride	2.50	0.149		2.51	mg/L		94.5	(75%-125%)	MXL2	09/13/17	09:40
Sulfate	10.0	5.85		15.9	mg/L		101	(75%-125%)			
Nutrient Analysis											
Batch	1698259										
QC1203868982	431850001	DUP									
Nitrogen, Ammonia		0.496		0.504	mg/L	1.6		(0%-20%)	KLP1	09/05/17	10:46
QC1203868980	LCS										
Nitrogen, Ammonia	1.00			0.918	mg/L		91.8	(90%-110%)		09/05/17	10:41
QC1203868979	MB										
Nitrogen, Ammonia			U	ND	mg/L					09/05/17	10:41
QC1203868984	431850001	MS									
Nitrogen, Ammonia	1.00	0.496		1.44	mg/L		94.4	(90%-110%)		09/05/17	10:47
Batch	1698267										
QC1203869002	431850001	DUP									
Nitrogen, Total Kjeldahl		1.57		1.60	mg/L	1.89		(0%-20%)	KLP1	09/06/17	11:45
QC1203869000	LCS										
Nitrogen, Total Kjeldahl	1.00			0.954	mg/L		95.4	(90%-110%)		09/06/17	11:40
QC1203868999	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					09/06/17	11:39
QC1203869006	431850001	MS									
Nitrogen, Total Kjeldahl	1.00	1.57		2.85	mg/L		128 *	(90%-110%)		09/06/17	11:46
Batch	1698270										
QC1203869021	431850001	DUP									
Nitrogen, Nitrate/Nitrite		0.134		0.134	mg/L	0 ^		(+/-0.050)	AXH3	09/05/17	10:07

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QC Summary

Workorder: 432105

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1698270										
QC1203869020	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.05	mg/L		105	(90%-110%)	AXH3	09/05/17	10:05
QC1203869019	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					09/05/17	10:03
QC1203869024	431850001	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.134		1.18	mg/L		105	(90%-110%)		09/05/17	10:08
Batch	1698273										
QC1203869044	432105001	DUP									
Phosphorus, Total as P		0.116		0.106	mg/L	9.01 ^		(+/-0.050)	KLP1	09/07/17	12:16
QC1203869042	LCS										
Phosphorus, Total as P	1.00			1.15	mg/L		115	(80%-124%)		09/07/17	12:03
QC1203869041	MB										
Phosphorus, Total as P			U	ND	mg/L					09/07/17	12:15
QC1203869046	432105001	MS									
Phosphorus, Total as P	1.00	0.116		1.24	mg/L		112	(63%-139%)		09/07/17	12:17
Solids Analysis											
Batch	1698443										
QC1203869517	432041001	DUP									
Total Dissolved Solids		129		123	mg/L	6.74*		(0%-5%)	KLP1	09/06/17	15:30
QC1203869514	LCS										
Total Dissolved Solids	300			286	mg/L		95.2	(95%-105%)		09/06/17	15:30
QC1203869513	MB										
Total Dissolved Solids			U	ND	mg/L					09/06/17	15:30

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QC Summary

Workorder: 432105

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1698841										
QC1203870473	432105009	DUP									
Alkalinity, Total as CaCO3		48.5		47.9	mg/L	1.24		(0%-20%)	RXB5	09/07/17	17:05
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203870470	LCS										
Alkalinity, Total as CaCO3	100			107	mg/L		107	(90%-110%)		09/07/17	15:57
QC1203870475	432105009	MS									
Alkalinity, Total as CaCO3	100	48.5		150	mg/L		102	(80%-120%)		09/07/17	17:06
Batch	1698844										
QC1203871261	432105009	DUP									
pH	H	7.76	H	7.80	SU	0.514		(0%-5%)	RXB5	09/07/17	16:55
QC1203870477	LCS										
pH	7.00			7.00	SU		100	(99%-101%)		09/07/17	16:49
Batch	1701648										
QC1203877745	431853001	DUP									
Conductivity		267		268	umhos/cm	0.374		(0%-10%)	VH1	09/20/17	15:07
QC1203877746	432189001	DUP									
Conductivity		199		199	umhos/cm	0		(0%-10%)		09/20/17	15:12
QC1203877744	LCS										
Conductivity	1410			1400	umhos/cm		98.9	(95%-105%)		09/20/17	15:05

- 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

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QC Summary

Workorder: 432105

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J	Value is estimated										
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	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.