

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:

Revised data begins on page 310.

[illegible]

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133327

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1035		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-47		FIELD PREP:	F	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <u>NA</u>

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

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): A. Vigil, A. Stanfield

RELINQUISHED BY (Printed Name) Allisyn Stanfield (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) M. Mordy (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/30/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133299

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1035		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-47		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	REG	
TOP DEPTH:	OK		SAMPLE USAGE:	INV	✓
BOTTOM DEPTH:	↓	✓	EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
✓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	✓	✓

SAMPLE COMMENTS: slight breeze while sampling

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1035	HH:MM	Dissolved Oxygen	6.35	Flow (in gpm)	4.00
Oxidation-Reduction Potential	160.7		pH	6.88	Specific Conductance	108.7
Temperature	15.2		Turbidity	2.89		

COLLECTED BY (PRINT): A. Vigil, A. Stanfield

RELINQUISHED BY (Printed Name) Allizyn Stanfield (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205
	Date/Time		Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133335

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1035		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-47		FIELD PREP:	F	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FD	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
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	↓	↓
↓	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

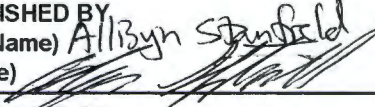
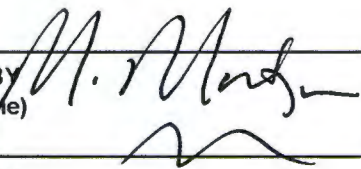
SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Vigil, A. Stanfield

RELINQUISHED BY (Printed Name) Allbyn Stanfield (Signature) 	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) M. M. M. M. (Signature) 	Date/Time 6/13/17 1205
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/30/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133337

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1035	1	MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	6SP	
LOCATION ID:	R-47		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FD	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <input checked="" type="checkbox"/> NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE		
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		
	WSP-CN(T)	250 ML POLY	1	NAOH		
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: Slight breeze while sampling

LOCATION COMMENTS: None

FIELD PARAMETERS:

Sample Time	1035	HH:MM	Dissolved Oxygen	6.35	Flow (in gpm)	4.00
Oxidation-Reduction Potential	160.7		pH	6.88	Specific Conductance	108.7
Temperature	15.2		Turbidity	2.89		

COLLECTED BY (PRINT): A. Virgil, A. Stanfield

RELINQUISHED BY (Printed Name) Allizyn Stanfield (Signature)	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) (Signature)	Date/Time 6/13/17 1205
	Date/Time		Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133341

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1035		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-47		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FB	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE	↓	↓

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): A. Vigil, A. Stanfield

RELINQUISHED BY (Printed Name) Allison Stanfield (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time 6/13/17 1205
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/30/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-133344

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	6/13/17	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1053		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	AS 6/13/17 GSPDC	
LOCATION ID:	R-47		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FTB	
TOP DEPTH:	OK		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / (NA)

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

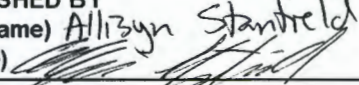
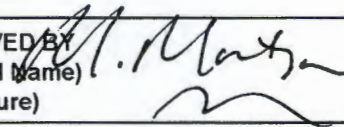
SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT): A. Vigil, A. Stanfield

RELINQUISHED BY (Printed Name) Allizyn Stanfield (Signature) 	Date/Time 6/13/17 1205	RECEIVED BY (Printed Name) M. Martin (Signature) 	Date/Time 6/13/17 1205
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/30/2017

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1748

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
425532	EPA:120.1	1	1			
425532	EPA:150.1	1	1			
425532	EPA:160.1	1	1			
425532	EPA:170.0	2	2	1	1	
425532	EPA:245.2	2	2			
425532	EPA:300.0	1	1			
425532	EPA:310.1	1	1			
425532	EPA:335.4	1	1			
425532	EPA:350.1	1	1			
425532	EPA:351.2	1	1			
425532	EPA:353.2	1	1			
425532	EPA:365.4	1	1			
425532	SM:A2340B	1	1			
425532	SW-846:6010C	1	1			
425532	SW-846:6020	1	1			
425532	SW-846:6850	1	1			
425532	SW-846:8260B	1	1	1	1	
425532	SW-846:8270D	1	1		1	
425532	SW-846:8330B	1	1			
425532	SW-846:9060	1	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
425532	EPA:120.1	1679218	1679218	1	1									1			2				
425532	EPA:150.1	1676572	1676572	1	1									1	1		1				
425532	EPA:160.1	1675830	1675830	1	1				1					1			1				
425532	EPA:170.0	NA	NA	2	2	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
425532	EPA:245.2	1674758	1674757	2	2				1	2				1			2				
425532	EPA:300.0	1674677	1674677	1	1				1					1			1				
425532	EPA:310.1	1676562	1676562	1	1					1				1			1				
425532	EPA:335.4	1674062	1674061	1	1				1	1	1			1			1				
425532	EPA:350.1	1674632	1674631	1	1				1	1				1			1				
425532	EPA:351.2	1673872	1673870	1	1				1	1				1			1				
425532	EPA:353.2	1674641	1674641	1	1				1					1			1				
425532	EPA:365.4	1673877	1673876	1	1				1	1				1			1				
425532	SM:A2340B	1680103	1680103	1	1																
425532	SW-846:6010C	1674452	1674451	1	1				1	1				1			1				
425532	SW-846:6020	1674473	1674472	1	1				1	1				1			1				
425532	SW-846:6850	1675694	1675692	1	1				1	1	1			1							
425532	SW-846:8260B	1676097	1676097	1	1	1	1		3					6							
425532	SW-846:8270D	1674421	1674418	1	1		1		1	1	1			1							
425532	SW-846:8330B	1674747	1674744	1	1				1	1	1			1							
425532	SW-846:9060	1675261	1675261	1	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	BDW01-17-139079	1203823671	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CALA-17-139173	1203823670	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203823669	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133335	1203817346	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203817344	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	LCSD	1203817345	LCSD	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CALA-17-139174	1203815629	DUP	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	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203815628	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203815627	MB	1	0	0	0
EPA:170.0	VOC	CAWA-17-133299	425532001	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:170.0	VOC	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:170.0	VOC	CAWA-17-133337	425532006	FD	1	0	0	0
EPA:170.0	VOC	CAWA-17-133341	425532007	FB	1	0	0	0
EPA:170.0	VOC	CAWA-17-133344	425532008	FTB	1	0	0	0
EPA:245.2	INORGANIC	CALA-17-139172	1203813070	DUP	1	0	0	0
EPA:245.2	INORGANIC	CALA-17-139172	1203813072	MS	0	0	1	0
EPA:245.2	INORGANIC	CAWA-17-133299	1203813069	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133299	1203813071	MS	0	0	1	0
EPA:245.2	INORGANIC	CAWA-17-133299	425532002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:245.2	INORGANIC	CAWA-17-133337	425532006	FD	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203813068	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203813067	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CALA-17-139174	1203812852	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203812851	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203812850	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133335	1203817296	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133335	1203817299	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203817292	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133279	1203811491	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133279	1203811492	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133279	1203814049	MSD	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133299	425532002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-17-133337	425532006	FD	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203811490	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203811489	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133327	1203812737	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133327	1203812738	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-17-133327	425532003	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:350.1	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203812734	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203812733	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133286	1203811091	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133286	1203811092	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133299	425532002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-17-133337	425532006	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203811090	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203811089	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133307	1203812762	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203812761	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203812760	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133314	1203811108	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133314	1203811109	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133327	425532003	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-17-133335	425532004	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203811105	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203811104	MB	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-133327	425532003	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-17-133335	425532004	FD	1	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133327	1203812398	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133327	1203812399	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAWA-17-133327	425532003	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAWA-17-133335	425532004	FD	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203812397	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203812396	MB	17	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133327	1203812441	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133327	1203812442	MS	0	0	11	0
SW-846:6020	INORGANIC	CAWA-17-133327	425532003	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-17-133335	425532004	FD	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203812440	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203812439	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133327	1203815293	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133327	1203815294	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133327	425532003	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-17-133335	425532004	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203815292	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203815291	MB	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8260B	VOC	CAWA-17-133299	425532001	REG	80	3	0	0
SW-846:8260B	VOC	CAWA-17-133337	425532005	FD	80	3	0	0
SW-846:8260B	VOC	CAWA-17-133341	425532007	FB	80	3	0	0
SW-846:8260B	VOC	CAWA-17-133344	425532008	FTB	80	3	0	0
SW-846:8260B	VOC	LCS	1203816299	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203816300	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203817177	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203817178	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203818956	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203818957	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203816298	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203817176	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203818955	MB	80	3	0	0
SW-846:8270D	SVOC	CAWA-17-133299	1203812333	MS	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-133299	1203812334	MSD	0	6	76	0
SW-846:8270D	SVOC	CAWA-17-133299	425532001	REG	80	6	0	0
SW-846:8270D	SVOC	CAWA-17-133337	425532005	FD	80	6	0	0
SW-846:8270D	SVOC	CAWA-17-133341	425532007	FB	80	6	0	0
SW-846:8270D	SVOC	LCS	1203812332	LCS	0	6	76	0
SW-846:8270D	SVOC	MB	1203812331	MB	80	6	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133279	1203813031	MS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133279	1203813032	MSD	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133299	425532002	REG	20	1	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133337	425532006	FD	20	1	0	0
SW-846:8330B	LCMS/MS HIGH	LCS	1203813030	LCS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	MB	1203813029	MB	20	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133299	1203814350	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133299	425532002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133300	1203814351	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-17-133337	425532006	FD	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203814349	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203814348	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

DATA VALIDATION REPORT

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203811104	METHOD BLANK	EPA:365.4	W	Total Phosphate as Phosphorus	0.0324	J	mg/L	0.050
MB	1203812396	METHOD BLANK	SW-846:6010C	W	Silicon Dioxide	89.6	J	ug/L	213
MB	1203812733	METHOD BLANK	EPA:350.1	W	Ammonia as Nitrogen	0.0399	J	mg/L	0.050
CAWA-17-133341	425532007	FIELD BLANK	EPA:170.0	W	Temperature	5		Deg C	
CAWA-17-133344	425532008	TRIP BLANK	EPA:170.0	W	Temperature	5		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-17-133327	1203812733	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0399	mg/L	0.103		0.050	Y	5	100	Y
CAWA-17-133335	1203812733	METHOD BLANK	EPA:350.1	Ammonia as Nitrogen	0.0399	mg/L	0.116		0.050	Y	5	100	Y
CAWA-17-133327	1203811104	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0324	mg/L	0.0508		0.050	Y	5	100	Y
CAWA-17-133335	1203811104	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0324	mg/L	0.0546		0.050	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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

DATA VALIDATION REPORT

Field Sample ID	MS Lab Sample ID	MSD Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS Spike Recovery	MSD Spike Recovery	MS Upper Limit	MS Lower Limit	MS Reject Limit	RPD	RPD Limit
CAWA-17-133299	1203812333	1203812334	SW-846:8270D	Benzidine	1674418	06-20-2017	W	41	71	130	15		53	30

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-47	2017-1748	CAWA-17-133327	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	14	N	0.103	mg/L	0.103	mg/L			W	06/13/2017		1674632	VAL	Y
R-47	2017-1748	CAWA-17-133327	REG	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus		U	14	N	0.0508	mg/L	0.0508	mg/L			W	06/13/2017		1673877	VAL	Y
R-47	2017-1748	CAWA-17-133335	FD	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		U	14	N	0.116	mg/L	0.116	mg/L			W	06/13/2017		1674632	VAL	Y

DATA VALIDATION REPORT

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-47	2017-1748	CAWA-17-133335	FD	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus	U	I4	N	0.0546	mg/L	0.0546	mg/L			W	06/13/2017	1673877	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 qualify. The analyte is detected in the sample.

U_LAB

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-133299	R-47	REG	EPA:170.0	0	1
CAWA-17-133299	R-47	REG	EPA:245.2	0	1
CAWA-17-133299	R-47	REG	EPA:335.4	0	1
CAWA-17-133299	R-47	REG	EPA:351.2	0	1
CAWA-17-133299	R-47	REG	SW-846:8260B	0	80
CAWA-17-133299	R-47	REG	SW-846:8270D	0	80
CAWA-17-133299	R-47	REG	SW-846:8330B	0	20
CAWA-17-133299	R-47	REG	SW-846:9060	0	1
CAWA-17-133327	R-47	REG	EPA:120.1	0	1
CAWA-17-133327	R-47	REG	EPA:150.1	0	1
CAWA-17-133327	R-47	REG	EPA:160.1	0	1
CAWA-17-133327	R-47	REG	EPA:170.0	0	1
CAWA-17-133327	R-47	REG	EPA:245.2	0	1
CAWA-17-133327	R-47	REG	EPA:300.0	0	4
CAWA-17-133327	R-47	REG	EPA:310.1	0	2
CAWA-17-133327	R-47	REG	EPA:350.1	0	1
CAWA-17-133327	R-47	REG	EPA:353.2	0	1
CAWA-17-133327	R-47	REG	EPA:365.4	0	1
CAWA-17-133327	R-47	REG	SM:A2340B	0	1
CAWA-17-133327	R-47	REG	SW-846:6010C	0	17

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-133327	R-47	REG	SW-846:6020	0	11
CAWA-17-133327	R-47	REG	SW-846:6850	0	1
CAWA-17-133335	R-47	FD	EPA:120.1	0	1
CAWA-17-133335	R-47	FD	EPA:150.1	0	1
CAWA-17-133335	R-47	FD	EPA:160.1	0	1
CAWA-17-133335	R-47	FD	EPA:170.0	0	1
CAWA-17-133335	R-47	FD	EPA:245.2	0	1
CAWA-17-133335	R-47	FD	EPA:300.0	0	4
CAWA-17-133335	R-47	FD	EPA:310.1	0	2
CAWA-17-133335	R-47	FD	EPA:350.1	0	1
CAWA-17-133335	R-47	FD	EPA:353.2	0	1
CAWA-17-133335	R-47	FD	EPA:365.4	0	1
CAWA-17-133335	R-47	FD	SM:A2340B	0	1
CAWA-17-133335	R-47	FD	SW-846:6010C	0	17
CAWA-17-133335	R-47	FD	SW-846:6020	0	11
CAWA-17-133335	R-47	FD	SW-846:6850	0	1
CAWA-17-133337	R-47	FD	EPA:170.0	0	1
CAWA-17-133337	R-47	FD	EPA:245.2	0	1
CAWA-17-133337	R-47	FD	EPA:335.4	0	1
CAWA-17-133337	R-47	FD	EPA:351.2	0	1
CAWA-17-133337	R-47	FD	SW-846:8260B	0	80
CAWA-17-133337	R-47	FD	SW-846:8270D	0	80
CAWA-17-133337	R-47	FD	SW-846:8330B	0	20
CAWA-17-133337	R-47	FD	SW-846:9060	0	1
CAWA-17-133341	R-47	FB	EPA:170.0	0	1
CAWA-17-133341	R-47	FB	SW-846:8260B	0	80
CAWA-17-133341	R-47	FB	SW-846:8270D	0	80
CAWA-17-133344	R-47	FTB	EPA:170.0	0	1
CAWA-17-133344	R-47	FTB	SW-846:8260B	0	80

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1748 - Rev

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
425532	SW-846:8330B	1	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
425532	SW-846:8330B	1674747	1674744	1	1				1												

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133299	425532002	REG	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133337	425532006	FD	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	MB	1203813029	MB	3	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

DATA VALIDATION REPORT

6. Any surrogate recoveries outside the control limits?

No.

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

No.

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

<u>Reason Code</u>	<u>Description</u>
U_LAB	The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-133299	R-47	REG	SW-846:8330B	0	3
CAWA-17-133337	R-47	FD	SW-846:8330B	0	3



July 06, 2017

gel.com

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

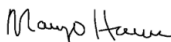
Re: LANL- WQH Water Samples
Work Order: 425532
SDG: 2017-1748

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 15, 2017, and analyzed for Explosives by LCMSMS, GC/MS Semivolatile, 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,


Margo Herron for
Valerie Davis
Project Manager

Chain of Custody: 2017-1748
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 425532
SDG: 2017-1748

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 425532
SDG # : 2017-1748**

July 06, 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 June 15, 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>
425532001	CAWA-17-133299
425532002	CAWA-17-133299
425532003	CAWA-17-133327
425532004	CAWA-17-133335
425532005	CAWA-17-133337
425532006	CAWA-17-133337
425532007	CAWA-17-133341
425532008	CAWA-17-133344

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 Semivolatile, 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.

Margo Herron
Margo Herron for
Valerie Davis
Project Manager


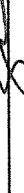
List of current GEL Certifications as of 06 July 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation

General Engineering	<h1>Chain of Custody/Analysis Request</h1>	COC/Lab Request #: 2017-1748 Page 1 of 1
Charleston SC		

[illegible]

Special Instructions:						
Relinquished by:		Print Name: <u>Melissa Adams</u>	Date/Time: <u>04/14/13 3:00</u>	Received by: 	Print Name: <u>Zae Worshe</u>	Date/Time: <u>4/15/12 9:12</u>
Relinquished by:		Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:		Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>ESH</u>		SDG/AR/COC/Work Order: <u>425532</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/15/17</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 2153</u> <u>5908 1782 2164</u> <u>5908 1782 2175</u> <u>5908 1782 2142</u> <u>5908 1782 2120</u> <u>5908 1782 2131</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM/InR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>5°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No <input checked="" type="checkbox"/> N/A ___ Sample ID's and containers affected: <u>-133344 rec'd w/ headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials

AM

Date

6/16/17

Page

of

GL-CHL-SR-001 Rev 5

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

SHIP DATE: 14 JUN 17
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CAD: 0014176/CAFE2916

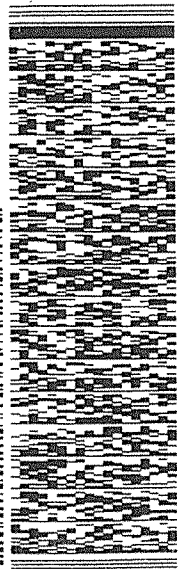
BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0WE991158W100

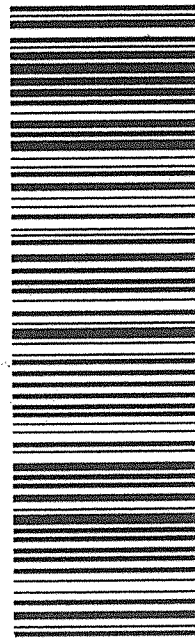


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PRIORITY OVERNIGHT

TRK# 5908 1782 2153

X7 RBWA

29407
SC-US CHS



RT0
FZ 0

2153
06.15

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

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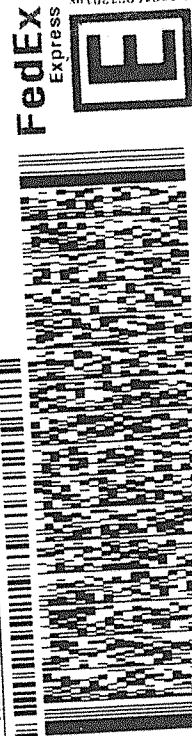
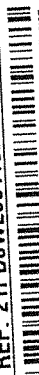
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LOS ALAMOS, NM 87545
UNITED STATES US

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0WE991158W100

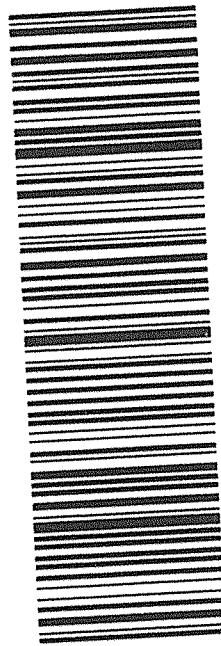


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PRIORITY OVERNIGHT

1 of 2
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MASTER

X7 RBWA

29407
SC-US CHS



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FZ 0

2131
06.15

SHIP DATE: 14 JUN 17
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2916

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

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

TO VALERIE DAVIS

GENERAL ENGINEERING LAB

2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PDOWE991158W100

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Express



THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

2 of 2

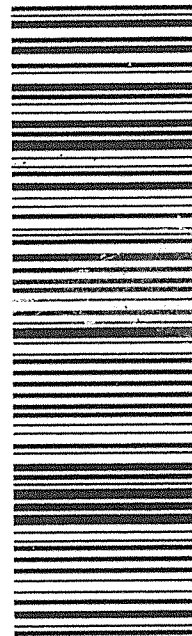
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SC-US CHS



Part # 156140V-434 RIT2 06/15 3

2142
06.15

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KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

TO VALERIE DAVIS

GENERAL ENGINEERING LAB

2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

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FedEx
Express



THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

2 of 2

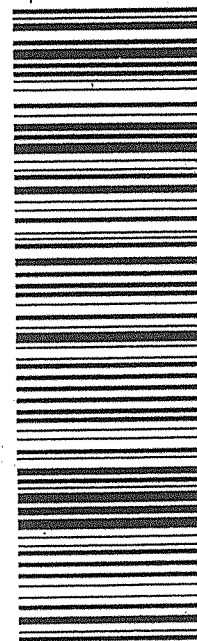
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X7 RBWA

29407
SC-US CHS



Part # 156140V-434 RIT2 06/15 3

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06.15

RT 0

FZ 0

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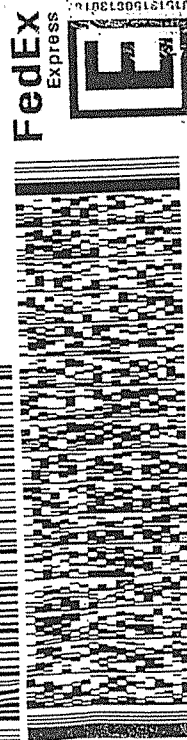
BILL SENDER

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

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171
REF: 21PD0ASRAE20DF6X0A

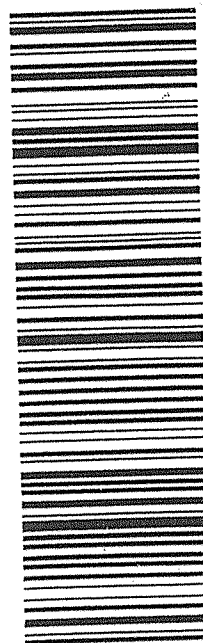


THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

1 of 2
TRK# 5908 1782 2164
MASTER

X7 RBWA

29407
SC-US
CHS



RT0
2164
06.15
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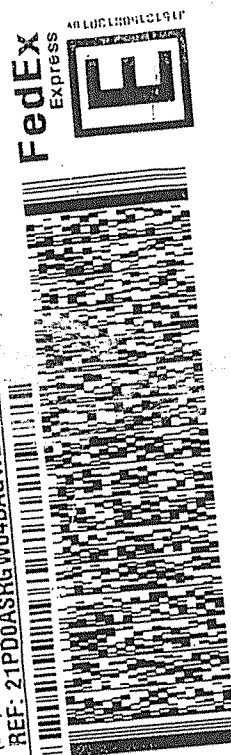
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KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171
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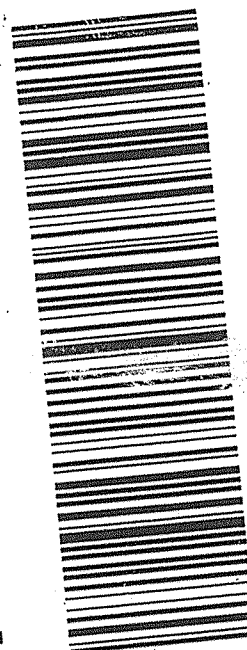


THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 5908 1782 2120
[0201]

X7 RBWA

29407
SC-US
CHS



RT0
2164
06.15
FZ 0

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 #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch
Number: 1676097

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
425532001	CAWA-17-133299
425532005	CAWA-17-133337
425532007	CAWA-17-133341
425532008	CAWA-17-133344
1203816298	Method Blank (MB)
1203816299	Laboratory Control Sample (LCS)
1203816300	Laboratory Control Sample (LCS)
1203816301	425329001(CAWA-17-133302) Post Spike (PS)
1203816302	425329001(CAWA-17-133302) Post Spike (PS)
1203816303	425329001(CAWA-17-133302) Post Spike Duplicate (PSD)
1203816304	425329001(CAWA-17-133302) Post Spike Duplicate (PSD)
1203817176	Method Blank (MB)
1203817177	Laboratory Control Sample (LCS)
1203817178	Laboratory Control Sample (LCS)
1203818955	Method Blank (MB)
1203818956	Laboratory Control Sample (LCS)
1203818957	Laboratory Control Sample (LCS)

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

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

SOP Reference

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

Calibration Information

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

Initial Calibration

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

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blanks analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 425329001 (CAWA-17-133302) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

Relative Percent Difference (RPD) Statement

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

Sample	Analyte	Value
1203816301PS and 1203816303PSD (CAWA-17-133302)	Chloromethane	33* (0%-20%)
	Vinyl chloride	34* (0%-20%)

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

Sample 425532008 (CAWA-17-133344) contained head-space greater than pea size. The Project Manager was notified and the results are reported.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Sample 425532005 (CAWA-17-133337) was re-analyzed due to unacceptable surrogate or internal standard recoveries in the initial analysis. The re-analyses confirmed/and or passed and were reported.

Miscellaneous Information**Manual Integrations**

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

TIC Comment

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

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

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

Electronic Package Comment

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

System Configuration

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

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

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

VOA4.I	Hewlett Packard 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10
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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: 2017-1748 GEL Work Order: 425532

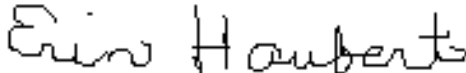
The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Erin Haubert

Date: 11 JUL 2017

Title: Data Validator

Sample Data Summary

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 17:24	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 17:24				
Data File:	062217V4\4N417.D	Column:	DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 17:24	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 17:24				
Data File:	062217V4\4N417.D	Column:	DB-624		

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

**Volatile
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Sample Summary**

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SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 17:24	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 17:24				
Data File:	062217V4\4N417.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.5	50.0	ug/L 93	(71%-134%)
Bromofluorobenzene	47.4	50.0	ug/L 95	(70%-131%)
Toluene-d8	47.7	50.0	ug/L 95	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.54	6.53	ug/L	0	J

**Volatile
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Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532005	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133337	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA1.I	Dilution:	1
Run Date:	06/25/2017 20:12	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	06/25/2017 20:12				
Data File:	062517V1\IN713.D	Column:	DB-624		

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

**Volatile
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Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532005	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133337	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA1.I	Dilution:	1
Run Date:	06/25/2017 20:12	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	06/25/2017 20:12				
Data File:	062517V1\1N713.D	Column:	DB-624		

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

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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA1.I	Dilution: 1
Run Date: 06/25/2017 20:12	Analyst: PXY1	Purge Vol: 5 mL
Prep Date: 06/25/2017 20:12		
Data File: 062517V1\1N713.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.1	50.0	ug/L 104	(71%-134%)
Bromofluorobenzene	61.7	50.0	ug/L 123	(70%-131%)
Toluene-d8	50.3	50.0	ug/L 101	(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: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:22	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:22		
Data File: 062217V4\4N419.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532007	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133341	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 18:22	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 18:22				
Data File:	062217V4\4N419.D	Column:	DB-624		

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

**Volatile
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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:22	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:22		
Data File: 062217V4\4N419.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.3	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	48.2	50.0	ug/L 96	(70%-131%)
Toluene-d8	47.1	50.0	ug/L 94	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.521	13.6	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:53	Matrix: W
Lab Sample ID: 425532008	Date Received: 06/15/2017 09:05	
Client Sample: VOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133344	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:52	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:52		
Data File: 062217V4\4N420.D	Column: DB-624	

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:53	Matrix: W
Lab Sample ID: 425532008	Date Received: 06/15/2017 09:05	
Client Sample: VOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133344	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:52	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:52		
Data File: 062217V4\4N420.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:53	Matrix: W
Lab Sample ID: 425532008	Date Received: 06/15/2017 09:05	
Client Sample: VOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133344	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:52	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:52		
Data File: 062217V4\4N420.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.5	50.0	ug/L 99	(71%-134%)
Bromofluorobenzene	47.9	50.0	ug/L 96	(70%-131%)
Toluene-d8	45.2	50.0	ug/L 90	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	12.132	13.1	ug/L	0	J
	unknown siloxane	14.509	26.1	ug/L	0	J
	unknown siloxane	16.466	5.42	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

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SDG Number: 2017-1748**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203816299	LCS for batch 1676097	89	96	88
1203816300	LCS for batch 1676097	93	95	98
1203816298	MB for batch 1676097	91	98	89
1203816301	CAWA-17-133302PS	99	97	93
1203816303	CAWA-17-133302PSD	99	98	95
1203816302	CAWA-17-133302PS	97	97	101
1203816304	CAWA-17-133302PSD	102	97	101
1203817177	LCS for batch 1676097	103	97	93
1203817178	LCS for batch 1676097	105	95	100
1203817176	MB for batch 1676097	105	97	98
425532001	CAWA-17-133299	93	95	95
425532007	CAWA-17-133341	101	94	96
425532008	CAWA-17-133344	99	90	96
1203818956	LCS for batch 1676097	99	97	107
1203818957	LCS for batch 1676097	97	97	110
1203818955	MB for batch 1676097	101	102	118
425532005	CAWA-17-133337	104	101	123

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: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	96.3	96	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1140	91	61-125
67-64-1	LCS Acetone	250	0.0	298	119	48-157
74-88-4	LCS Iodomethane	250	0.0	244	98	72-128
75-15-0	LCS Carbon disulfide	250	0.0	234	94	69-138
108-05-4	LCS Vinyl acetate	250	0.0	213	85	67-125
78-93-3	LCS 2-Butanone	250	0.0	260	104	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	223	89	66-124
591-78-6	LCS 2-Hexanone	250	0.0	264	106	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	30.0	60	40-160
74-87-3	LCS Chloromethane	50.0	0.0	41.8	84	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	41.8	84	65-137
74-83-9	LCS Bromomethane	50.0	0.0	42.2	84	63-137
75-00-3	LCS Chloroethane	50.0	0.0	44.5	89	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	42.4	85	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	48.7	97	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	47.1	94	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	44.2	88	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	46.1	92	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	48.6	97	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	47.8	96	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	49.9	100	75-123

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	46.4	93	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	51.4	103	76-125
67-66-3	LCS Chloroform	50.0	0.0	45.4	91	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	46.5	93	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	45.5	91	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	49.3	99	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	44.4	89	74-122
71-43-2	LCS Benzene	50.0	0.0	45.4	91	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	48.2	96	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	46.9	94	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	47.7	95	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	48.4	97	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	48.2	96	78-131
108-88-3	LCS Toluene	50.0	0.0	44.6	89	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.2	96	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	46.2	92	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	44.3	89	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	47.7	95	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	45.7	91	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	47.5	95	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	46.9	94	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	45.5	91	73-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	46.6	93	74-126
100-42-5	LCS Styrene	50.0	0.0	51.3	103	72-130
75-25-2	LCS Bromoform	50.0	0.0	52.8	106	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	45.2	90	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	42.4	85	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	43.7	87	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	46.3	93	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	43.7	87	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	46.6	93	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	45.9	92	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	42.5	85	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	47.7	95	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	45.9	92	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	46.5	93	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	47.9	96	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	45.1	90	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	44.3	89	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	44.5	89	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	42.6	85	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	48.0	96	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	47.1	94	70-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	44.6	89	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	50.9	102	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.6	91	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5040	101	63-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816300

Instrument: VOA4.I

Analysis Date: 06/21/2017 11:05

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	282	113	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	223	89	61-148
107-05-1	LCS Allyl chloride	250	0.0	237	95	59-125
107-13-1	LCS Acrylonitrile	250	0.0	222	89	65-122
107-12-0	LCS Propionitrile	250	0.0	216	86	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	229	91	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	228	91	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	218	87	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2140	86	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	36.7	73	66-147

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	99.5	100	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1350	108	56-131
67-64-1	PS Acetone	250	0.00 U	157	63	25-155
74-88-4	PS Iodomethane	250	0.00 U	264	105	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	248	99	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	211	85	48-133
78-93-3	PS 2-Butanone	250	0.00 U	204	81	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	263	105	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	228	91	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	31.9	64	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	40.3	81	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	44.3	89	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	43.4	87	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	44.7	89	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	43.2	86	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	50.5	101	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	50.4	101	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	48.7	97	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	53.8	108	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	52.6	105	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	52.3	105	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	53.5	107	69-127

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	50.3	101	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	56.3	113	71-130
67-66-3	PS Chloroform	50.0	0.00 U	50.7	101	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	50.8	102	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	49.1	98	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	52.6	105	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	52.6	105	69-130
71-43-2	PS Benzene	50.0	0.00 U	49.2	98	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	51.7	103	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	51.4	103	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	53.3	107	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	52.7	105	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	52.7	105	70-134
108-88-3	PS Toluene	50.0	0.00 U	47.1	94	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	53.7	107	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	51.1	102	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	49.5	99	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	48.7	97	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	48.7	97	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	52.6	105	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	49.4	99	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	48.1	96	61-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	49.4	99	62-131
100-42-5	PS Styrene	50.0	0.00 U	52.8	106	59-135
75-25-2	PS Bromoform	50.0	0.00 U	56.4	113	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	47.3	95	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	49.2	98	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	50.7	101	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	48.8	98	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	45.4	91	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	50.0	100	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	48.6	97	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	44.4	89	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	50.9	102	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	48.2	96	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	48.8	98	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	50.2	100	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	46.7	93	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	45.5	91	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	46.4	93	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	52.0	104	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	47.9	96	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	56.5	113	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	50.3	101	52-135

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	47.8	96	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	54.3	109	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	48.2	96	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	6270	125	60-140

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	97.6	98	59-132	2	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	1370	109	56-131	1	0-20
67-64-1	PSD Acetone	250	0.00 U	153	61	25-155	3	0-20
74-88-4	PSD Iodomethane	250	0.00 U	269	108	66-133	2	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	242	97	61-141	3	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	200	80	48-133	6	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	199	80	25-143	2	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	256	102	61-127	3	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	214	86	33-138	6	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	32.1	64	33-164	1	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	29.0	58	53-139	33 *	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	31.4	63	58-140	34 *	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	42.1	84	59-146	3	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	45.1	90	65-129	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	44.2	88	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	50.7	101	69-127	1	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	51.5	103	59-130	2	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	48.9	98	62-123	0	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	55.2	110	69-132	3	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	52.7	105	65-127	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	52.3	105	67-127	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	53.9	108	69-127	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	52.2	104	66-137	4	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	57.0	114	71-130	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	51.4	103	71-129	1	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	52.8	106	69-139	4	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	49.9	100	67-130	2	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	55.8	112	66-143	6	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	52.3	105	69-130	1	0-20
71-43-2	PSD Benzene	50.0	0.00 U	49.5	99	66-125	1	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	52.1	104	65-131	1	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	50.7	101	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	53.9	108	72-129	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	53.9	108	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	53.2	106	70-134	1	0-20
108-88-3	PSD Toluene	50.0	0.00 U	47.7	95	60-126	1	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	54.1	108	69-135	1	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	51.3	103	66-125	0	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	48.2	96	67-124	3	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	51.4	103	60-130	5	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	51.2	102	68-143	5	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	54.8	110	71-127	4	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	49.6	99	64-124	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	47.6	95	61-130	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.2	96	62-131	2	0-20
100-42-5	PSD Styrene	50.0	0.00 U	51.5	103	59-135	2	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	59.4	119	64-138	5	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	47.3	95	55-133	0	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	48.6	97	62-129	1	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	50.5	101	70-124	0	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	49.3	99	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	43.7	87	50-133	4	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	47.1	94	53-135	6	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	45.6	91	56-128	6	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	44.6	89	53-130	1	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	50.6	101	55-135	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	47.5	95	53-132	2	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	47.0	94	50-138	4	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	48.7	97	49-138	3	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	46.8	94	56-126	0	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	45.8	92	55-125	1	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	43.7	87	43-142	6	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	52.5	105	62-141	1	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	47.7	95	40-147	1	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	55.1	110	62-134	2	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	50.7	101	52-135	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.5	97	50-133	1	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	55.2	110	71-133	2	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	48.3	97	60-125	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	6160	123	60-140	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816302

Instrument: VOA4.I

Analysis Date: 06/21/2017 20:18

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	262	105	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	209	84	57-149
107-05-1	PS Allyl chloride	250	0.00 U	227	91	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	218	87	59-129
107-12-0	PS Propionitrile	250	0.00 U	215	86	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	222	89	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	225	90	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	216	86	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2120	85	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	37.0	74	63-146

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816304

Instrument: VOA4.I

Analysis Date: 06/21/2017 20:47

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00	U	280	112	49-141	7	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00	U	231	92	57-149	10	0-20
107-05-1	PSD Allyl chloride	250	0.00	U	244	97	54-128	7	0-20
107-13-1	PSD Acrylonitrile	250	0.00	U	236	94	59-129	8	0-20
107-12-0	PSD Propionitrile	250	0.00	U	228	91	58-131	6	0-20
126-98-7	PSD Methacrylonitrile	250	0.00	U	241	96	59-134	8	0-20
80-62-6	PSD Methyl methacrylate	250	0.00	U	241	96	62-135	7	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00	U	231	92	60-136	7	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00	U	2250	90	60-143	6	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00	U	39.6	79	63-146	7	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	98.1	98	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1270	101	61-125
67-64-1	LCS Acetone	250	0.0	339	136	48-157
74-88-4	LCS Iodomethane	250	0.0	245	98	72-128
75-15-0	LCS Carbon disulfide	250	0.0	240	96	69-138
108-05-4	LCS Vinyl acetate	250	0.0	246	98	67-125
78-93-3	LCS 2-Butanone	250	0.0	290	116	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	250	100	66-124
591-78-6	LCS 2-Hexanone	250	0.0	295	118	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	57.4	115	40-160
74-87-3	LCS Chloromethane	50.0	0.0	51.9	104	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	56.2	112	65-137
74-83-9	LCS Bromomethane	50.0	0.0	49.7	99	63-137
75-00-3	LCS Chloroethane	50.0	0.0	51.4	103	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	51.9	104	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.9	104	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	48.7	97	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	45.0	90	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	49.7	99	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	49.6	99	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	49.4	99	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	49.6	99	75-123

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	50.9	102	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	51.3	103	76-125
67-66-3	LCS Chloroform	50.0	0.0	47.8	96	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	49.7	99	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	47.6	95	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	53.0	106	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	50.1	100	74-122
71-43-2	LCS Benzene	50.0	0.0	46.2	92	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	48.7	97	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	48.0	96	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	50.8	102	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	51.4	103	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	51.0	102	78-131
108-88-3	LCS Toluene	50.0	0.0	44.9	90	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	50.6	101	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	47.0	94	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	46.9	94	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	47.1	94	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	46.2	92	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	49.4	99	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	46.7	93	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	46.2	92	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.3	97	74-126
100-42-5	LCS Styrene	50.0	0.0	52.0	104	72-130
75-25-2	LCS Bromoform	50.0	0.0	54.5	109	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	45.8	92	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	44.8	90	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	46.2	92	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.2	90	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	44.5	89	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	48.4	97	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.2	92	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	43.7	87	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	47.8	96	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	47.2	94	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	47.7	95	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	48.6	97	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	44.8	90	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	44.5	89	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	46.0	92	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	46.1	92	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	46.4	93	72-136
91-20-3	LCS Naphthalene	50.0	0.0	51.6	103	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	49.1	98	70-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	45.8	92	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	50.9	102	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.2	90	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	6040	121	63-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817178

Instrument: VOA4.I

Analysis Date: 06/22/2017 11:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	298	119	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	233	93	61-148
107-05-1	LCS Allyl chloride	250	0.0	237	95	59-125
107-13-1	LCS Acrylonitrile	250	0.0	240	96	65-122
107-12-0	LCS Propionitrile	250	0.0	238	95	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	243	97	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	241	96	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	231	93	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2460	99	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	38.7	77	66-147

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	96.9	97	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1320	105	61-125
67-64-1	LCS Acetone	250	0.0	313	125	48-157
74-88-4	LCS Iodomethane	250	0.0	220	88	72-128
75-15-0	LCS Carbon disulfide	250	0.0	223	89	69-138
108-05-4	LCS Vinyl acetate	250	0.0	261	104	67-125
78-93-3	LCS 2-Butanone	250	0.0	300	120	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	247	99	66-124
591-78-6	LCS 2-Hexanone	250	0.0	294	118	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	53.4	107	40-160
74-87-3	LCS Chloromethane	50.0	0.0	51.2	102	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	54.2	108	65-137
74-83-9	LCS Bromomethane	50.0	0.0	59.1	118	63-137
75-00-3	LCS Chloroethane	50.0	0.0	54.3	109	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	57.5	115	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.2	102	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	50.2	100	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	45.4	91	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	44.3	89	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	51.9	104	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	50.8	102	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	48.3	97	75-123

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	54.7	109	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	47.7	95	76-125
67-66-3	LCS Chloroform	50.0	0.0	50.0	100	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	51.3	103	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	49.4	99	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	54.7	109	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	52.4	105	74-122
71-43-2	LCS Benzene	50.0	0.0	46.8	94	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	49.1	98	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	49.8	100	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	48.5	97	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	52.3	105	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	50.2	100	78-131
108-88-3	LCS Toluene	50.0	0.0	46.5	93	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	52.8	106	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	48.4	97	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	48.3	97	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	48.1	96	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	52.7	105	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	48.7	97	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	47.8	96	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	47.5	95	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.4	97	74-126
100-42-5	LCS Styrene	50.0	0.0	48.2	96	72-130
75-25-2	LCS Bromoform	50.0	0.0	53.1	106	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.7	93	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	48.2	96	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	50.1	100	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.1	90	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	46.9	94	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	47.8	96	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.9	94	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	47.3	95	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	48.9	98	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	47.9	96	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	48.7	97	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	49.8	100	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	45.4	91	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	46.1	92	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	50.2	100	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	43.2	86	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	48.9	98	72-136
91-20-3	LCS Naphthalene	50.0	0.0	47.9	96	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	49.9	100	70-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	48.3	97	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.1	104	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.8	92	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5340	107	63-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818957

Instrument: VOA1.I

Analysis Date: 06/25/2017 16:50

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	256	102	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	265	106	61-148
107-05-1	LCS Allyl chloride	250	0.0	247	99	59-125
107-13-1	LCS Acrylonitrile	250	0.0	260	104	65-122
107-12-0	LCS Propionitrile	250	0.0	264	105	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	266	106	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	250	100	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	233	93	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	3090	123	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	46.1	92	66-147

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA4.I	Data File:	062117V4\4N306A.D
Lab Sample ID:	1203816298	Prep Date:	06/21/2017 11:34	Analyzed:	06/21/17 11:34
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 1676097	1203816299	062117V4\4N303A.D	06/21/17	1007
02 LCS for batch 1676097	1203816300	062117V4\4N305A.D	06/21/17	1105
03 CAWA-17-133302PS	1203816301	062117V4\4N322.D	06/21/17	1920
04 CAWA-17-133302PSD	1203816303	062117V4\4N323.D	06/21/17	1949
05 CAWA-17-133302PS	1203816302	062117V4\4N324.D	06/21/17	2018
06 CAWA-17-133302PSD	1203816304	062117V4\4N325.D	06/21/17	2047

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA4.I	Data File:	062217V4\4N406A.D
Lab Sample ID:	1203817176	Prep Date:	06/22/2017 12:04	Analyzed:	06/22/17 12:04
Column:	DB-624				

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

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
08 LCS for batch 1676097	1203817177	062217V4\4N403A.D	06/22/17	1037
09 LCS for batch 1676097	1203817178	062217V4\4N405A.D	06/22/17	1135
10 CAWA-17-133299	425532001	062217V4\4N417.D	06/22/17	1724
11 CAWA-17-133341	425532007	062217V4\4N419.D	06/22/17	1822
12 CAWA-17-133344	425532008	062217V4\4N420.D	06/22/17	1852

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA1.I	Data File:	062517V1\1N709A.D
Lab Sample ID:	1203818955	Prep Date:	06/25/2017 18:17	Analyzed:	06/25/17 18:17
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
14 LCS for batch 1676097	1203818956	062517V1\1N703A.D	06/25/17	1524
15 LCS for batch 1676097	1203818957	062517V1\1N706A.D	06/25/17	1650
16 CAWA-17-133337	425532005	062517V1\1N713.D	06/25/17	2012

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203816298			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/21/2017 11:34	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/21/2017 11:34			
Data File: 062117V4\4N306A.D	Column: DB-624		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Matrix: WATER
Lab Sample ID: 1203816298	
Client Sample: QC for batch 1676097	Client: ARSL004
Client ID: MB for batch 1676097	Method: SW-846:8260B
Batch ID: 1676097	Project: QC
Run Date: 06/21/2017 11:34	SOP Ref: GL-OA-E-038
Prep Date: 06/21/2017 11:34	Dilution: 1
Data File: 062117V4\4N306A.D	Purge Vol: 5 mL
	Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203816298		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	MB for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/21/2017 11:34	Analyst:	VXY1
Prep Date:	06/21/2017 11:34		
Data File:	062117V4\4N306A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	45.3	50.0	91	(71%-134%)
Bromofluorobenzene	44.7	50.0	89	(70%-131%)
Toluene-d8	48.9	50.0	98	(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: 2017-1748

Lab Sample ID: 1203816299

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 10:07

Prep Date: 06/21/2017 10:07

Data File: 062117V4\4N303A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.5	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		42.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		47.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		47.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		45.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		47.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		43.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		42.6	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		47.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		44.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		46.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.6	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		44.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		46.4	ug/L	0.300	1.00
78-93-3	2-Butanone		260	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		45.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		264	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		42.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		47.9	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		223	ug/L	1.50	5.00
67-64-1	Acetone		298	ug/L	1.50	10.0
75-05-8	Acetonitrile		1140	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		45.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		46.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.4	ug/L	0.300	1.00
75-25-2	Bromoform		52.8	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203816299

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 10:07

Prep Date: 06/21/2017 10:07

Data File: 062117V4\4N303A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		234	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		49.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.9	ug/L	0.300	1.00
75-00-3	Chloroethane		44.5	ug/L	0.300	1.00
67-66-3	Chloroform		45.4	ug/L	0.300	1.00
74-87-3	Chloromethane		41.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		30.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		48.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		45.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		43.5	ug/L	0.300	1.00
74-88-4	Iodomethane		244	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.2	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		44.2	ug/L	1.00	10.0
91-20-3	Naphthalene		48.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		47.7	ug/L	0.300	1.00
108-88-3	Toluene		44.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		42.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		213	ug/L	1.50	5.00
75-01-4	Vinyl chloride		41.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		48.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.3	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5040	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		44.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		43.7	ug/L	0.300	1.00
95-47-6	o-Xylene		46.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203816299		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/21/2017 10:07	Analyst:	VXY1
Prep Date:	06/21/2017 10:07		
Data File:	062117V4\4N303A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		46.1	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.7	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		48.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.7	50.0	ug/L 89	(71%-134%)
Bromofluorobenzene	44.2	50.0	ug/L 88	(70%-131%)
Toluene-d8	48.2	50.0	ug/L 96	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Matrix: WATER
Lab Sample ID: 1203816300	
Client Sample: QC for batch 1676097	Client: ARSL004
Client ID: LCS for batch 1676097	Method: SW-846:8260B
Batch ID: 1676097	Project: QC
Run Date: 06/21/2017 11:05	SOP Ref: GL-OA-E-038
Prep Date: 06/21/2017 11:05	Dilution: 1
Data File: 062117V4\4N305A.D	Purge Vol: 5 mL
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		36.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		282	ug/L	1.50	5.00
107-13-1	Acrylonitrile		222	ug/L	1.50	5.00
107-05-1	Allyl chloride		237	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203816300

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 11:05

Prep Date: 06/21/2017 11:05

Data File: 062117V4\4N305A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		218	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2140	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		229	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		228	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		216	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		223	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203816300		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/21/2017 11:05	Analyst:	VXY1
Prep Date:	06/21/2017 11:05		
Data File:	062117V4\4N305A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.4	50.0	93	(71%-134%)
Bromofluorobenzene	48.9	50.0	98	(70%-131%)
Toluene-d8	47.7	50.0	95	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/08/2017 11:53	Matrix: W
Lab Sample ID: 1203816301	Date Received: 06/13/2017 09:10	
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: CAWA-17-133302PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/21/2017 19:20	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/21/2017 19:20		
Data File: 062117V4\4N322.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		54.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		50.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		49.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.4	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.3	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		47.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		52.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.0	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.7	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		49.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.3	ug/L	0.300	1.00
78-93-3	2-Butanone		204	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		48.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		228	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		50.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		263	ug/L	1.50	5.00
67-64-1	Acetone		157	ug/L	1.50	10.0
75-05-8	Acetonitrile		1350	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		49.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		48.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		56.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		52.7	ug/L	0.300	1.00
75-25-2	Bromoform		56.4	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816301	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:20				
Data File:	062117V4\4N322.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		43.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		248	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		52.6	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.4	ug/L	0.300	1.00
75-00-3	Chloroethane		44.7	ug/L	0.300	1.00
67-66-3	Chloroform		50.7	ug/L	0.300	1.00
74-87-3	Chloromethane		40.3	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		48.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		31.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.1	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		47.9	ug/L	0.300	1.00
74-88-4	Iodomethane		264	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		47.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.7	ug/L	1.00	10.0
91-20-3	Naphthalene		56.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.7	ug/L	0.300	1.00
108-88-3	Toluene		47.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		51.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		43.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		211	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.5	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		52.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		99.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6270	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		46.4	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		45.4	ug/L	0.300	1.00
95-47-6	o-Xylene		49.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		48.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816301	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:20				
Data File:	062117V4\4N322.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		53.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		53.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.3	50.0	99	(71%-134%)
Bromofluorobenzene	46.7	50.0	93	(70%-131%)
Toluene-d8	48.4	50.0	97	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816302	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:18	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:18				
Data File:	062117V4\4N324.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		37.0	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		262	ug/L	1.50	5.00
107-13-1	Acrylonitrile		218	ug/L	1.50	5.00
107-05-1	Allyl chloride		227	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816302	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:18	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:18				
Data File:	062117V4\4N324.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		216	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2120	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		222	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		225	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		215	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		209	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748	Date Collected: 06/08/2017 11:53	Matrix: W
Lab Sample ID: 1203816302	Date Received: 06/13/2017 09:10	
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: CAWA-17-133302PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/21/2017 20:18	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/21/2017 20:18		
Data File: 062117V4\4N324.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.7	50.0	97	(71%-134%)
Bromofluorobenzene	50.4	50.0	101	(70%-131%)
Toluene-d8	48.5	50.0	97	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		52.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		48.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		51.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		48.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.8	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		50.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		48.2	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		52.2	ug/L	0.300	1.00
78-93-3	2-Butanone		199	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		45.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		214	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.6	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		256	ug/L	1.50	5.00
67-64-1	Acetone		153	ug/L	1.50	10.0
75-05-8	Acetonitrile		1370	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		49.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		57.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		53.9	ug/L	0.300	1.00
75-25-2	Bromoform		59.4	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		242	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		55.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.6	ug/L	0.300	1.00
75-00-3	Chloroethane		45.1	ug/L	0.300	1.00
67-66-3	Chloroform		51.4	ug/L	0.300	1.00
74-87-3	Chloromethane		29.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		32.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		47.7	ug/L	0.300	1.00
74-88-4	Iodomethane		269	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		47.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.9	ug/L	1.00	10.0
91-20-3	Naphthalene		55.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.4	ug/L	0.300	1.00
108-88-3	Toluene		47.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		44.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		200	ug/L	1.50	5.00
75-01-4	Vinyl chloride		31.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		53.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		97.6	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6160	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		43.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		43.7	ug/L	0.300	1.00
95-47-6	o-Xylene		48.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.0	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		55.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.6	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		54.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.5	50.0	99	(71%-134%)
Bromofluorobenzene	47.6	50.0	95	(70%-131%)
Toluene-d8	48.9	50.0	98	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		39.6	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		280	ug/L	1.50	5.00
107-13-1	Acrylonitrile		236	ug/L	1.50	5.00
107-05-1	Allyl chloride		244	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		231	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2250	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		241	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		228	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		231	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.8	50.0	ug/L 102	(71%-134%)
Bromofluorobenzene	50.6	50.0	ug/L 101	(70%-131%)
Toluene-d8	48.7	50.0	ug/L 97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203817176

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 12:04

Prep Date: 06/22/2017 12:04

Data File: 062217V4\4N406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203817176			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/22/2017 12:04	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/22/2017 12:04			
Data File: 062217V4\4N406A.D	Column: DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748	Matrix: WATER	
Lab Sample ID: 1203817176		
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 12:04	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 12:04		
Data File: 062217V4\4N406A.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.4	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	48.8	50.0	ug/L 98	(70%-131%)
Toluene-d8	48.3	50.0	ug/L 97	(74%-124%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203817177			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/22/2017 10:37	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/22/2017 10:37			
Data File: 062217V4\4N403A.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		49.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		44.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		47.0	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		49.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		48.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		47.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		46.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		45.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		46.1	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.4	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		50.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		48.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		46.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		44.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.9	ug/L	0.300	1.00
78-93-3	2-Butanone		290	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.2	ug/L	0.300	1.00
591-78-6	2-Hexanone		295	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		43.7	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		250	ug/L	1.50	5.00
67-64-1	Acetone		339	ug/L	1.50	10.0
75-05-8	Acetonitrile		1270	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.4	ug/L	0.300	1.00
75-25-2	Bromoform		54.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748

Lab Sample ID: 1203817177

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 10:37

Prep Date: 06/22/2017 10:37

Data File: 062217V4\4N403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		49.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		240	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		53.0	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.7	ug/L	0.300	1.00
75-00-3	Chloroethane		51.4	ug/L	0.300	1.00
67-66-3	Chloroform		47.8	ug/L	0.300	1.00
74-87-3	Chloromethane		51.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		46.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		57.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		46.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		46.4	ug/L	0.300	1.00
74-88-4	Iodomethane		245	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.8	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.0	ug/L	1.00	10.0
91-20-3	Naphthalene		51.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		47.1	ug/L	0.300	1.00
108-88-3	Toluene		44.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		51.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		246	ug/L	1.50	5.00
75-01-4	Vinyl chloride		56.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		51.0	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		98.1	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6040	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		46.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.5	ug/L	0.300	1.00
95-47-6	o-Xylene		48.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203817177		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/22/2017 10:37	Analyst:	VXY1
Prep Date:	06/22/2017 10:37		
Data File:	062217V4\4N403A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		49.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		50.6	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		51.3	50.0	ug/L	103	(71%-134%)
Bromofluorobenzene		46.5	50.0	ug/L	93	(70%-131%)
Toluene-d8		48.6	50.0	ug/L	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203817178			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/22/2017 11:35	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/22/2017 11:35			
Data File: 062217V4\4N405A.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		38.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		298	ug/L	1.50	5.00
107-13-1	Acrylonitrile		240	ug/L	1.50	5.00
107-05-1	Allyl chloride		237	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203817178

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: LCS for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA4.I

Dilution: 1

Run Date: 06/22/2017 11:35

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 06/22/2017 11:35

Data File: 062217V4\4N405A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		231	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2460	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		243	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		238	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		233	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203817178		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/22/2017 11:35	Analyst:	VXY1
Prep Date:	06/22/2017 11:35		
Data File:	062217V4\4N405A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.5	50.0	ug/L	105 (71%-134%)
Bromofluorobenzene	49.9	50.0	ug/L	100 (70%-131%)
Toluene-d8	47.5	50.0	ug/L	95 (74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 18:17

Prep Date: 06/25/2017 18:17

Data File: 062517V1\IN709A.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: MB for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA1.I

Dilution: 1

Run Date: 06/25/2017 18:17

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 06/25/2017 18:17

Data File: 062517V1\IN709A.D

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

Page 3 of 3

SDG Number: 2017-1748

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 18:17

Prep Date: 06/25/2017 18:17

Data File: 062517V1\1N709A.D

Matrix: WATER

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.7	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	59.2	50.0	ug/L 118	(70%-131%)
Toluene-d8	51.0	50.0	ug/L 102	(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: 2017-1748

Lab Sample ID: 1203818956

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 15:24

Prep Date: 06/25/2017 15:24

Data File: 062517V1\IN703A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		51.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		48.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		48.4	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		50.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		48.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		43.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		48.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		49.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		48.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		46.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		54.7	ug/L	0.300	1.00
78-93-3	2-Butanone		300	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		294	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		47.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.8	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		247	ug/L	1.50	5.00
67-64-1	Acetone		313	ug/L	1.50	10.0
75-05-8	Acetonitrile		1320	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		52.3	ug/L	0.300	1.00
75-25-2	Bromoform		53.1	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748

Lab Sample ID: 1203818956

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 15:24

Prep Date: 06/25/2017 15:24

Data File: 062517V1\IN703A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		59.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		223	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		54.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		47.8	ug/L	0.300	1.00
75-00-3	Chloroethane		54.3	ug/L	0.300	1.00
67-66-3	Chloroform		50.0	ug/L	0.300	1.00
74-87-3	Chloromethane		51.2	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		48.5	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		53.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.2	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.9	ug/L	0.300	1.00
74-88-4	Iodomethane		220	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.7	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.4	ug/L	1.00	10.0
91-20-3	Naphthalene		47.9	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		48.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.1	ug/L	0.300	1.00
108-88-3	Toluene		46.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		57.5	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		261	ug/L	1.50	5.00
75-01-4	Vinyl chloride		54.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		48.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		50.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.9	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5340	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		46.9	ug/L	0.300	1.00
95-47-6	o-Xylene		48.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		48.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203818956		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA1.I
Run Date:	06/25/2017 15:24	Analyst:	PXY1
Prep Date:	06/25/2017 15:24		
Data File:	062517V1\1N703A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		44.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		48.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		51.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		52.8	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		49.7	50.0	ug/L	99	(71%-134%)
Bromofluorobenzene		53.4	50.0	ug/L	107	(70%-131%)
Toluene-d8		48.5	50.0	ug/L	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203818957

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 16:50

Prep Date: 06/25/2017 16:50

Data File: 062517V1\IN706A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		46.1	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		256	ug/L	1.50	5.00
107-13-1	Acrylonitrile		260	ug/L	1.50	5.00
107-05-1	Allyl chloride		247	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203818957

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: LCS for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA1.I

Dilution: 1

Run Date: 06/25/2017 16:50

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 06/25/2017 16:50

Data File: 062517V1\IN706A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		233	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		3090	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		266	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		250	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		264	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		265	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203818957		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA1.I
Run Date:	06/25/2017 16:50	Analyst:	PXY1
Prep Date:	06/25/2017 16:50		
Data File:	062517V1\1N706A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.7	50.0	97	(71%-134%)
Bromofluorobenzene	55.0	50.0	110	(70%-131%)
Toluene-d8	48.5	50.0	97	(74%-124%)

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

Procedure:	Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1674421
Prep Batch Number:	1674418

Sample Analysis

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

Sample ID	Client ID
425532001	CAWA-17-133299
425532005	CAWA-17-133337
425532007	CAWA-17-133341
1203812331	Method Blank (MB)
1203812332	Laboratory Control Sample (LCS)
1203812333	425532001(CAWA-17-133299) Matrix Spike (MS)
1203812334	425532001(CAWA-17-133299) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 39.

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

Calibration Information

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

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

Initial Calibration

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

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples 425532001 (CAWA-17-133299), 425532005 (CAWA-17-133337) and 425532007 (CAWA-17-133341) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 425532001 (CAWA-17-133299) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203812333MS and 1203812334MSD (CAWA-17-133299)	Benzidine	53* (0%-30%)

Internal Standard (ISTD) Acceptance

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

Technical Information:

Holding Time Specifications

All samples in this SDG in this batch met the specified holding time.

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

Miscellaneous Information:

Manual Integrations

Sample 1203812332 (LCS) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

TIC Comment

Tentatively identified compounds (TIC) were requested for samples 425532001 (CAWA-17-133299), 425532005 (CAWA-17-133337) and 425532007 (CAWA-17-133341) in this SDG in this batch.

Additional Comments

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

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSDA.I	Agilent 7890B/5977A GC/MSD with 7693A Autoinjector	Agilent7890B/5977	DB-5MS	25m x 0.2mm x 0.33um (5% Polysilarylene-95% Polydimethylsiloxane)

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: 2017-1748 GEL Work Order: 425532

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: Barbara Bailey

Date: 11 JUL 2017

Title: Data Validator

Sample Data Summary

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

Page 1 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 16:55	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 062017.s\Af2014.D	Column: DB-5.625	

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

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

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1674421	Inst:	MSDA.I	Dilution:	1
Run Date:	06/20/2017 16:55	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	06/20/2017 05:15	Aliquot:	1000 mL	Final Volume:	1 mL
Data File:	062017.s\Af2014.D	Column:	DB-5.625		

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

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

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 16:55	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 062017.s\Af2014.D	Column: DB-5.625	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	81.9	100	ug/L	82 (32%-124%)
2-Fluorobiphenyl	35.3	50.0	ug/L	71 (32%-112%)
2-Fluorophenol	30.9	100	ug/L	31 (15%-88%)
Nitrobenzene-d5	31.6	50.0	ug/L	63 (36%-115%)
Phenol-d5	19.3	100	ug/L	19 (15%-91%)
p-Terphenyl-d14	41.6	50.0	ug/L	83 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	15.951	4.1	ug/L	0	J
	unknown	16.198	9.05	ug/L	0	J
	unknown	16.251	6.61	ug/L	0	J
	unknown	16.322	6.62	ug/L	0	J
020548-62-3	Phthalic acid, bis(7-methyloctyl)	16.392	8.26	ug/L	91	NJ
	unknown	16.463	18.3	ug/L	0	J
	unknown	16.61	7.41	ug/L	0	J
	unknown	16.663	4.09	ug/L	0	J
	unknown	16.757	9.6	ug/L	0	J
	unknown	16.822	5.47	ug/L	0	J
1000308-94-0	Phthalic acid, heptyl undecyl este	22.398	12.5	ug/L	86	NJ

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

Page 1 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
90-12-0	1-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
91-57-6	2-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
83-32-9	Acenaphthene	U	1.04	ug/L	0.313	1.04
208-96-8	Acenaphthylene	U	1.04	ug/L	0.313	1.04
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
120-12-7	Anthracene	U	1.04	ug/L	0.313	1.04
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
56-55-3	Benzo(a)anthracene	U	1.04	ug/L	0.313	1.04
50-32-8	Benzo(a)pyrene	U	1.04	ug/L	0.313	1.04
205-99-2	Benzo(b)fluoranthene	U	1.04	ug/L	0.313	1.04
191-24-2	Benzo(ghi)perylene	U	1.04	ug/L	0.313	1.04

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.04	ug/L	0.313	1.04
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
218-01-9	Chrysene	U	1.04	ug/L	0.313	1.04
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
53-70-3	Dibenzo(a,h)anthracene	U	1.04	ug/L	0.313	1.04
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
206-44-0	Fluoranthene	U	1.04	ug/L	0.313	1.04
86-73-7	Fluorene	U	1.04	ug/L	0.313	1.04
118-74-1	Hexachlorobenzene	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.04	ug/L	0.313	1.04
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
91-20-3	Naphthalene	U	1.04	ug/L	0.313	1.04
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
87-86-5	Pentachlorophenol	U	10.4	ug/L	3.13	10.4
85-01-8	Phenanthrene	U	1.04	ug/L	0.313	1.04
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
129-00-0	Pyrene	U	1.04	ug/L	0.313	1.04
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4

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

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	85.8	104	ug/L	82 (32%-124%)
2-Fluorobiphenyl	36.1	52.1	ug/L	69 (32%-112%)
2-Fluorophenol	31.5	104	ug/L	30 (15%-88%)
Nitrobenzene-d5	31.8	52.1	ug/L	61 (36%-115%)
Phenol-d5	20.0	104	ug/L	19 (15%-91%)
p-Terphenyl-d14	40.3	52.1	ug/L	77 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	18.151	4.6	ug/L	0	J
	unknown	19.604	6.34	ug/L	0	J
	unknown	21.286	8.55	ug/L	0	J
	unknown	22.398	5.14	ug/L	0	J
	unknown	22.527	10.9	ug/L	0	J

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

Page 1 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
90-12-0	1-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
91-57-6	2-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
83-32-9	Acenaphthene	U	1.04	ug/L	0.313	1.04
208-96-8	Acenaphthylene	U	1.04	ug/L	0.313	1.04
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
120-12-7	Anthracene	U	1.04	ug/L	0.313	1.04
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
56-55-3	Benzo(a)anthracene	U	1.04	ug/L	0.313	1.04
50-32-8	Benzo(a)pyrene	U	1.04	ug/L	0.313	1.04
205-99-2	Benzo(b)fluoranthene	U	1.04	ug/L	0.313	1.04
191-24-2	Benzo(ghi)perylene	U	1.04	ug/L	0.313	1.04

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.04	ug/L	0.313	1.04
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
218-01-9	Chrysene	U	1.04	ug/L	0.313	1.04
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
53-70-3	Dibenzo(a,h)anthracene	U	1.04	ug/L	0.313	1.04
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
206-44-0	Fluoranthene	U	1.04	ug/L	0.313	1.04
86-73-7	Fluorene	U	1.04	ug/L	0.313	1.04
118-74-1	Hexachlorobenzene	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.04	ug/L	0.313	1.04
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
91-20-3	Naphthalene	U	1.04	ug/L	0.313	1.04
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
87-86-5	Pentachlorophenol	U	10.4	ug/L	3.13	10.4
85-01-8	Phenanthrene	U	1.04	ug/L	0.313	1.04
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
129-00-0	Pyrene	U	1.04	ug/L	0.313	1.04
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	81.9	104	ug/L 79	(32%-124%)
2-Fluorobiphenyl	36.7	52.1	ug/L 71	(32%-112%)
2-Fluorophenol	34.1	104	ug/L 33	(15%-88%)
Nitrobenzene-d5	33.6	52.1	ug/L 64	(36%-115%)
Phenol-d5	22.5	104	ug/L 22	(15%-91%)
p-Terphenyl-d14	40.8	52.1	ug/L 78	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	19.557	5.6	ug/L	0	J
	unknown	22.721	7.34	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1748

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203812331	MB for batch 1674418	36	23	59	63	79	76
1203812332	LCS for batch 1674418	46	29	75	78	91	80
425532001	CAWA-17-133299	31	19	63	71	82	83
1203812333	CAWA-17-133299MS	54	42	77	83	101	86
1203812334	CAWA-17-133299MSD	48	37	71	78	94	80
425532005	CAWA-17-133337	30	19	61	69	82	77
425532007	CAWA-17-133341	33	22	64	71	79	78

Surrogate**Acceptance Limits**

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

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	23.0	46	30-88
110-86-1	LCS Pyridine	50.0	0.0	21.2	42	27-89
62-53-3	LCS Aniline	50.0	0.0	35.9	72	49-112
108-95-2	LCS Phenol	50.0	0.0	14.9	30	16-82
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	37.1	74	51-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	37.0	74	49-105
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	33.9	68	37-95
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	34.9	70	38-96
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	34.9	70	39-97
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	36.8	74	44-123
100-51-6	LCS Benzyl alcohol	50.0	0.0	32.4	65	44-102
95-48-7	LCS o-Cresol	50.0	0.0	32.9	66	41-101
65794-96-9	LCS m,p-Cresols	50.0	0.0	33.0	66	43-102
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	40.1	80	54-115
67-72-1	LCS Hexachloroethane	50.0	0.0	32.7	65	36-96
98-95-3	LCS Nitrobenzene	50.0	0.0	37.8	76	53-115
78-59-1	LCS Isophorone	50.0	0.0	37.2	74	56-117
88-75-5	LCS 2-Nitrophenol	50.0	0.0	38.8	78	51-113
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	36.1	72	51-104
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	37.6	75	55-114
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	40.8	82	53-109
65-85-0	LCS Benzoic acid	100	0.0	35.9	36	21-74

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	43.5	87	65-136
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	35.6	71	35-98
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	41.2	82	55-115
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	36.3	73	42-103
91-20-3	LCS Naphthalene	50.0	0.0	37.1	74	44-102
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	36.3	73	45-108
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	25.1	50	34-89
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	41.7	83	55-120
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	38.0	76	55-116
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	34.8	70	44-107
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	38.4	77	53-121
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	45.1	90	61-139
131-11-3	LCS Dimethylphthalate	50.0	0.0	40.5	81	60-122
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	39.4	79	59-122
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	43.8	88	57-124
208-96-8	LCS Acenaphthylene	50.0	0.0	38.2	76	50-113
83-32-9	LCS Acenaphthene	50.0	0.0	38.5	77	49-112
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	39.8	80	34-122
132-64-9	LCS Dibenzofuran	50.0	0.0	36.8	74	50-111
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	41.0	82	54-122
84-66-2	LCS Diethylphthalate	50.0	0.0	41.7	83	57-122
100-02-7	LCS 4-Nitrophenol	50.0	0.0	11.3	23	15-137

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS Fluorene	50.0	0.0	39.3	79	52-114
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	45.0	90	52-121
100-01-6	LCS 4-Nitroaniline <i>p-Nitroaniline</i>	50.0	0.0	36.1	72	44-137
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	38.5	77	45-124
122-39-4	LCS Diphenylamine	50.0	0.0	37.7	75	55-113
122-66-7	LCS Azobenzene <i>1,2-Diphenylhydrazine</i>	50.0	0.0	36.4	73	53-115
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	36.8	74	54-116
118-74-1	LCS Hexachlorobenzene	50.0	0.0	39.2	78	54-115
87-86-5	LCS Pentachlorophenol	50.0	0.0	40.5	81	41-116
85-01-8	LCS Phenanthrene	50.0	0.0	39.6	79	55-110
120-12-7	LCS Anthracene	50.0	0.0	39.7	79	56-112
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	39.1	78	57-123
206-44-0	LCS Fluoranthene	50.0	0.0	40.5	81	54-118
129-00-0	LCS Pyrene	50.0	0.0	39.1	78	49-121
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	36.8	74	52-125
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	37.3	75	52-125
56-55-3	LCS Benzo(a)anthracene	50.0	0.0	41.0	82	57-112
218-01-9	LCS Chrysene	50.0	0.0	44.3	89	58-117
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	35.1	70	50-129
205-99-2	LCS Benzo(b)fluoranthene	50.0	0.0	42.6	85	41-118
207-08-9	LCS Benzo(k)fluoranthene	50.0	0.0	45.0	90	42-121
50-32-8	LCS Benzo(a)pyrene	50.0	0.0	43.0	86	40-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS Indeno(1,2,3-cd)pyrene	50.0	0.0	41.7	83	34-125
53-70-3	LCS Dibenzo(a,h)anthracene	50.0	0.0	44.0	88	38-129
191-24-2	LCS Benzo(ghi)perylene	50.0	0.0	42.9	86	33-131
123-91-1	LCS 1,4-Dioxane	50.0	0.0	23.3	47	38-78
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	38.5	77	54-113
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	34.0	68	44-102
1912-24-9	LCS Atrazine	50.0	0.0	42.3	85	60-131
92-87-5	LCS Benzidine	100	0.0	45.2	45	20-144
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	46.0	92	43-127
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	35.0	70	39-99

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	115	0.00 U	68.1	59	25-106
110-86-1	MS Pyridine	115	0.00 U	50.6	44	24-93
62-53-3	MS Aniline	115	0.00 U	81.4	71	37-113
108-95-2	MS Phenol	115	0.00 U	48.6	42	23-82
111-44-4	MS bis(2-Chloroethyl) ether	115	0.00 U	86.7	75	39-114
95-57-8	MS 2-Chlorophenol	115	0.00 U	84.4	73	37-108
541-73-1	MS 1,3-Dichlorobenzene	115	0.00 U	76.8	67	27-97
106-46-7	MS 1,4-Dichlorobenzene	115	0.00 U	79.0	69	28-97
95-50-1	MS 1,2-Dichlorobenzene	115	0.00 U	80.5	70	28-99
108-60-1	MS bis(2-Chloro-1-methylethyl)et	115	0.00 U	86.8	75	32-127
100-51-6	MS Benzyl alcohol	115	0.00 U	80.9	70	37-116
95-48-7	MS o-Cresol	115	0.00 U	77.5	67	34-109
65794-96-9	MS m,p-Cresols	115	0.00 U	80.8	70	36-120
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	115	0.00 U	95.4	83	42-118
67-72-1	MS Hexachloroethane	115	0.00 U	74.0	64	29-94
98-95-3	MS Nitrobenzene	115	0.00 U	88.3	77	38-123
78-59-1	MS Isophorone	115	0.00 U	89.8	78	43-120
88-75-5	MS 2-Nitrophenol	115	0.00 U	90.1	78	39-115
105-67-9	MS 2,4-Dimethylphenol	115	0.00 U	82.8	72	39-107
111-91-1	MS bis(2-Chloroethoxy)methane	115	0.00 U	89.1	78	42-118
120-83-2	MS 2,4-Dichlorophenol	115	0.00 U	94.8	82	40-111
65-85-0	MS Benzoic acid	230	0.00 U	119	52	17-95

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	115	0.00	U	104	91	44-138
87-68-3	MS	Hexachlorobutadiene	115	0.00	U	83.7	73	26-98
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	115	0.00	U	99.7	87	41-122
91-57-6	MS	2-Methylnaphthalene	115	0.00	U	90.5	79	29-109
91-20-3	MS	Naphthalene	115	0.00	U	90.0	78	31-108
90-12-0	MS	1-Methylnaphthalene	115	0.00	U	88.9	77	33-112
77-47-4	MS	Hexachlorocyclopentadiene	115	0.00	U	66.3	58	26-79
88-06-2	MS	2,4,6-Trichlorophenol	115	0.00	U	101	88	39-124
95-95-4	MS	2,4,5-Trichlorophenol	115	0.00	U	96.4	84	42-120
91-58-7	MS	2-Chloronaphthalene	115	0.00	U	87.7	76	29-113
88-74-4	MS	2-Nitroaniline o-Nitroaniline	115	0.00	U	94.2	82	41-121
99-09-2	MS	3-Nitroaniline m-Nitroaniline	115	0.00	U	119	104	42-144
131-11-3	MS	Dimethylphthalate	115	0.00	U	100	87	45-128
606-20-2	MS	2,6-Dinitrotoluene	115	0.00	U	98.8	86	46-124
121-14-2	MS	2,4-Dinitrotoluene	115	0.00	U	111	96	45-125
208-96-8	MS	Acenaphthylene	115	0.00	U	95.4	83	35-120
83-32-9	MS	Acenaphthene	115	0.00	U	98.4	86	35-117
51-28-5	MS	2,4-Dinitrophenol	115	0.00	U	99.1	86	27-122
132-64-9	MS	Dibenzofuran	115	0.00	U	94.1	82	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	115	0.00	U	103	89	40-128
84-66-2	MS	Diethylphthalate	115	0.00	U	104	91	43-127
100-02-7	MS	4-Nitrophenol	115	0.00	U	38.3	33	17-85

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	115	0.00 U	102	89	39-117
7005-72-3	MS	4-Chlorophenylphenylether	115	0.00 U	123	107	39-121
100-01-6	MS	4-Nitroaniline <i>p</i> -Nitroaniline	115	0.00 U	103	89	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	115	0.00 U	93.6	81	32-126
122-39-4	MS	Diphenylamine	115	0.00 U	91.4	80	37-118
122-66-7	MS	Azobenzene <i>1,2-Diphenylhydrazine</i>	115	0.00 U	88.8	77	38-120
101-55-3	MS	4-Bromophenylphenylether	115	0.00 U	93.8	82	39-121
118-74-1	MS	Hexachlorobenzene	115	0.00 U	95.3	83	40-118
87-86-5	MS	Pentachlorophenol	115	0.00 U	103	89	35-121
85-01-8	MS	Phenanthrene	115	0.00 U	98.4	86	40-115
120-12-7	MS	Anthracene	115	0.00 U	97.5	85	38-120
84-74-2	MS	Di-n-butylphthalate	115	0.00 U	93.5	81	41-128
206-44-0	MS	Fluoranthene	115	0.00 U	99.9	87	41-119
129-00-0	MS	Pyrene	115	0.00 U	98.6	86	35-128
85-68-7	MS	Butylbenzylphthalate	115	0.00 U	85.4	74	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	115	0.590 U	79.7	69	38-131
56-55-3	MS	Benzo(a)anthracene	115	0.00 U	100	87	39-120
218-01-9	MS	Chrysene	115	0.00 U	110	95	41-124
117-84-0	MS	Di-n-octylphthalate	115	1.03 U	74.3	64	37-134
205-99-2	MS	Benzo(b)fluoranthene	115	0.00 U	104	90	31-122
207-08-9	MS	Benzo(k)fluoranthene	115	0.00 U	109	94	33-123
50-32-8	MS	Benzo(a)pyrene	115	0.00 U	106	92	32-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS Indeno(1,2,3-cd)pyrene	115	0.00 U	97.7	85	27-121
53-70-3	MS Dibenzo(a,h)anthracene	115	0.00 U	104	90	30-125
191-24-2	MS Benzo(ghi)perylene	115	0.00 U	100	87	24-126
123-91-1	MS 1,4-Dioxane	115	0.00 U	71.2	62	24-110
930-55-2	MS N-Nitrosopyrrolidine	115	0.00 U	96.0	84	47-119
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	115	0.00 U	87.1	76	32-101
1912-24-9	MS Atrazine	115	0.00 U	109	95	42-129
92-87-5	MS Benzidine	230	0.00 U	94.1	41	15-130
91-94-1	MS 3,3'-Dichlorobenzidine	115	0.00 U	116	101	34-124
120-82-1	MS 1,2,4-Trichlorobenzene	115	0.00 U	84.0	73	26-102

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits	
62-75-9	MSD N-Methyl-N-nitrosomethylam	115	0.00	U	60.7	53	25-106	11	0-30
110-86-1	MSD Pyridine	115	0.00	U	53.1	46	24-93	5	0-30
62-53-3	MSD Aniline	115	0.00	U	78.2	68	37-113	4	0-30
108-95-2	MSD Phenol	115	0.00	U	42.9	37	23-82	13	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	115	0.00	U	77.8	68	39-114	11	0-30
95-57-8	MSD 2-Chlorophenol	115	0.00	U	76.5	67	37-108	10	0-30
541-73-1	MSD 1,3-Dichlorobenzene	115	0.00	U	76.6	67	27-97	0	0-30
106-46-7	MSD 1,4-Dichlorobenzene	115	0.00	U	78.3	68	28-97	1	0-30
95-50-1	MSD 1,2-Dichlorobenzene	115	0.00	U	79.5	69	28-99	1	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	115	0.00	U	78.9	69	32-127	10	0-30
100-51-6	MSD Benzyl alcohol	115	0.00	U	72.7	63	37-116	11	0-30
95-48-7	MSD o-Cresol	115	0.00	U	69.2	60	34-109	11	0-30
65794-96-9	MSD m,p-Cresols	115	0.00	U	73.4	64	36-120	10	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	115	0.00	U	86.1	75	42-118	10	0-30
67-72-1	MSD Hexachloroethane	115	0.00	U	76.2	66	29-94	3	0-30
98-95-3	MSD Nitrobenzene	115	0.00	U	79.4	69	38-123	11	0-30
78-59-1	MSD Isophorone	115	0.00	U	80.3	70	43-120	11	0-30
88-75-5	MSD 2-Nitrophenol	115	0.00	U	82.3	72	39-115	9	0-30
105-67-9	MSD 2,4-Dimethylphenol	115	0.00	U	72.9	63	39-107	13	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	115	0.00	U	81.1	71	42-118	9	0-30
120-83-2	MSD 2,4-Dichlorophenol	115	0.00	U	84.8	74	40-111	11	0-30
65-85-0	MSD Benzoic acid	230	0.00	U	111	48	17-95	7	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	115	0.00 U	93.7	82	44-138	11	0-30
87-68-3	MSD Hexachlorobutadiene	115	0.00 U	83.3	72	26-98	0	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	115	0.00 U	88.8	77	41-122	12	0-30
91-57-6	MSD 2-Methylnaphthalene	115	0.00 U	84.2	73	29-109	7	0-30
91-20-3	MSD Naphthalene	115	0.00 U	84.8	74	31-108	6	0-30
90-12-0	MSD 1-Methylnaphthalene	115	0.00 U	83.6	73	33-112	6	0-30
77-47-4	MSD Hexachlorocyclopentadiene	115	0.00 U	64.3	56	26-79	3	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	115	0.00 U	91.5	80	39-124	10	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	115	0.00 U	85.0	74	42-120	13	0-30
91-58-7	MSD 2-Chloronaphthalene	115	0.00 U	81.2	71	29-113	8	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	115	0.00 U	86.1	75	41-121	9	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	115	0.00 U	113	99	42-144	5	0-30
131-11-3	MSD Dimethylphthalate	115	0.00 U	91.7	80	45-128	9	0-30
606-20-2	MSD 2,6-Dinitrotoluene	115	0.00 U	90.1	78	46-124	9	0-30
121-14-2	MSD 2,4-Dinitrotoluene	115	0.00 U	102	89	45-125	8	0-30
208-96-8	MSD Acenaphthylene	115	0.00 U	87.0	76	35-120	9	0-30
83-32-9	MSD Acenaphthene	115	0.00 U	90.3	79	35-117	9	0-30
51-28-5	MSD 2,4-Dinitrophenol	115	0.00 U	93.1	81	27-122	6	0-30
132-64-9	MSD Dibenzofuran	115	0.00 U	85.8	75	38-113	9	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	115	0.00 U	93.3	81	40-128	10	0-30
84-66-2	MSD Diethylphthalate	115	0.00 U	94.9	83	43-127	9	0-30
100-02-7	MSD 4-Nitrophenol	115	0.00 U	37.3	32	17-85	3	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD Fluorene	115	0.00 U	92.8	81	39-117	9	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	115	0.00 U	111	97	39-121	10	0-30
100-01-6	MSD 4-Nitroaniline <i>p</i> -Nitroaniline	115	0.00 U	98.7	86	30-133	4	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	115	0.00 U	86.2	75	32-126	8	0-30
122-39-4	MSD Diphenylamine	115	0.00 U	83.2	72	37-118	9	0-30
122-66-7	MSD Azobenzene <i>1,2-Diphenylhydrazine</i>	115	0.00 U	81.2	71	38-120	9	0-30
101-55-3	MSD 4-Bromophenylphenylether	115	0.00 U	85.8	75	39-121	9	0-30
118-74-1	MSD Hexachlorobenzene	115	0.00 U	87.2	76	40-118	9	0-30
87-86-5	MSD Pentachlorophenol	115	0.00 U	93.0	81	35-121	10	0-30
85-01-8	MSD Phenanthrene	115	0.00 U	90.2	78	40-115	9	0-30
120-12-7	MSD Anthracene	115	0.00 U	90.2	78	38-120	8	0-30
84-74-2	MSD Di-n-butylphthalate	115	0.00 U	84.7	74	41-128	10	0-30
206-44-0	MSD Fluoranthene	115	0.00 U	91.3	79	41-119	9	0-30
129-00-0	MSD Pyrene	115	0.00 U	90.2	78	35-128	9	0-30
85-68-7	MSD Butylbenzylphthalate	115	0.00 U	76.2	66	40-129	11	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	115	0.590 U	68.8	59	38-131	15	0-30
56-55-3	MSD Benzo(a)anthracene	115	0.00 U	92.4	80	39-120	8	0-30
218-01-9	MSD Chrysene	115	0.00 U	101	88	41-124	9	0-30
117-84-0	MSD Di-n-octylphthalate	115	1.03 U	64.1	55	37-134	15	0-30
205-99-2	MSD Benzo(b)fluoranthene	115	0.00 U	96.3	84	31-122	7	0-30
207-08-9	MSD Benzo(k)fluoranthene	115	0.00 U	100	87	33-123	8	0-30
50-32-8	MSD Benzo(a)pyrene	115	0.00 U	97.1	84	32-118	9	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD Indeno(1,2,3-cd)pyrene	115	0.00	U	87.3	76	27-121	11	0-30
53-70-3	MSD Dibenzo(a,h)anthracene	115	0.00	U	91.8	80	30-125	12	0-30
191-24-2	MSD Benzo(ghi)perylene	115	0.00	U	89.6	78	24-126	11	0-30
123-91-1	MSD 1,4-Dioxane	115	0.00	U	62.3	54	24-110	13	0-30
930-55-2	MSD N-Nitrosopyrrolidine	115	0.00	U	86.7	75	47-119	10	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	115	0.00	U	82.7	72	32-101	5	0-30
1912-24-9	MSD Atrazine	115	0.00	U	100	87	42-129	9	0-30
92-87-5	MSD Benzidine	230	0.00	U	162	71	15-130	53 *	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	115	0.00	U	113	98	34-124	3	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	115	0.00	U	80.4	70	26-102	4	0-30

Method Blank Summary

Page 1 of 1

SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1674418	Instrument ID:	MSDA.I	Data File:	062017.s\Af2012.D
Lab Sample ID:	1203812331	Prep Date:	06/20/2017 05:15	Analyzed:	06/20/17 15:56
Column:	DB-5.625				

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 1674418	1203812332	062017.s\Af2013.D	06/20/17	1628
02 CAWA-17-133299	425532001	062017.s\Af2014.D	06/20/17	1655
03 CAWA-17-133299MS	1203812333	062017.s\Af2015.D	06/20/17	1722
04 CAWA-17-133299MSD	1203812334	062017.s\Af2016.D	06/20/17	1749
05 CAWA-17-133337	425532005	062017.s\Af2026.D	06/20/17	2220
06 CAWA-17-133341	425532007	062017.s\Af2027.D	06/20/17	2246

Quality Control Data

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

Page 1 of 3

SDG Number: 2017-1748

Lab Sample ID: 1203812331

Client Sample: QC for batch 1674418

Client ID: MB for batch 1674418

Batch ID: 1674421

Run Date: 06/20/2017 15:56

Prep Date: 06/20/2017 05:15

Data File: 062017.s\Af2012.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

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

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

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203812331

Client Sample: QC for batch 1674418

Client: ARSL004

Project: QC

Client ID: MB for batch 1674418

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1674421

Inst: MSDA.I

Dilution: 1

Run Date: 06/20/2017 15:56

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 06/20/2017 05:15

Aliquot: 1000 mL

Final Volume: 1 mL

Data File: 062017.s\Af2012.D

Column: DB-5.625

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

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

Page 3 of 3

SDG Number: 2017-1748

Lab Sample ID: 1203812331

Client Sample: QC for batch 1674418

Client ID: MB for batch 1674418

Batch ID: 1674421

Run Date: 06/20/2017 15:56

Prep Date: 06/20/2017 05:15

Data File: 062017.s\Af2012.D

Matrix: WATER

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	78.6	100	ug/L	79 (32%-124%)
2-Fluorobiphenyl	31.7	50.0	ug/L	63 (32%-112%)
2-Fluorophenol	36.4	100	ug/L	36 (15%-88%)
Nitrobenzene-d5	29.4	50.0	ug/L	59 (36%-115%)
Phenol-d5	23.1	100	ug/L	23 (15%-91%)
p-Terphenyl-d14	38.1	50.0	ug/L	76 (36%-121%)

Tentatively Identified Compound Summary

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

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

Page 1 of 3

SDG Number: 2017-1748

Lab Sample ID: 1203812332

Client Sample: QC for batch 1674418

Client ID: LCS for batch 1674418

Batch ID: 1674421

Run Date: 06/20/2017 16:28

Prep Date: 06/20/2017 05:15

Data File: 062017.s\Af2013.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSDA.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5.625

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		34.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		35.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		34.9	ug/L	3.00	10.0
122-66-7	Azobenzene		36.4	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		33.9	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		34.9	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		23.3	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		36.3	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		41.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		38.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		41.7	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		40.8	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		36.1	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		39.8	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		43.8	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		39.4	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		34.8	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		37.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		38.5	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		36.3	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		38.8	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		46.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		36.8	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		41.2	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		43.5	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		45.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		11.3	ug/L	3.00	10.0
83-32-9	Acenaphthene		38.5	ug/L	0.300	1.00
208-96-8	Acenaphthylene		38.2	ug/L	0.300	1.00
62-53-3	Aniline		35.9	ug/L	4.20	10.0
120-12-7	Anthracene		39.7	ug/L	0.300	1.00
1912-24-9	Atrazine		42.3	ug/L	3.00	10.0
92-87-5	Benzidine		45.2	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		41.0	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		43.0	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		42.6	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		42.9	ug/L	0.300	1.00

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

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203812332			
Client Sample: QC for batch 1674418	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1674418	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution:	1
Run Date: 06/20/2017 16:28	Analyst: JMB3	Inj. Vol:	1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: 062017.s\Af2013.D	Column: DB-5.625		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		45.0	ug/L	0.300	1.00
65-85-0	Benzoic acid		35.9	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		32.4	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		36.8	ug/L	3.00	10.0
218-01-9	Chrysene		44.3	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		39.1	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		35.1	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		44.0	ug/L	0.300	1.00
132-64-9	Dibenzofuran		36.8	ug/L	3.00	10.0
84-66-2	Diethylphthalate		41.7	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		40.5	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine		37.7	ug/L	3.00	10.0
206-44-0	Fluoranthene		40.5	ug/L	0.300	1.00
86-73-7	Fluorene		39.3	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		39.2	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		35.6	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		25.1	ug/L	3.00	10.0
67-72-1	Hexachloroethane		32.7	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		41.7	ug/L	0.300	1.00
78-59-1	Isophorone		37.2	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		23.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		40.1	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		38.5	ug/L	3.00	10.0
91-20-3	Naphthalene		37.1	ug/L	0.300	1.00
98-95-3	Nitrobenzene		37.8	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		40.5	ug/L	3.00	10.0
85-01-8	Phenanthrene		39.6	ug/L	0.300	1.00
108-95-2	Phenol		14.9	ug/L	3.00	10.0
129-00-0	Pyrene		39.1	ug/L	0.300	1.00
110-86-1	Pyridine		21.2	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		36.8	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		37.6	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		37.1	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		37.3	ug/L	3.00	10.0

**Semi-Volatile
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Sample Summary**

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SDG Number: 2017-1748	Matrix: WATER
Lab Sample ID: 1203812332	
Client Sample: QC for batch 1674418	Client: ARSL004
Client ID: LCS for batch 1674418	Method: SW846 3510C/8270D
Batch ID: 1674421	Inst: MSDA.I
Run Date: 06/20/2017 16:28	Analyst: JMB3
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL
Data File: 062017.s\Af2013.D	Column: DB-5.625
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		33.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		45.1	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		32.9	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		38.4	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		36.1	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	91.1	100	ug/L	91	(32%-124%)
2-Fluorobiphenyl	38.9	50.0	ug/L	78	(32%-112%)
2-Fluorophenol	45.7	100	ug/L	46	(15%-88%)
Nitrobenzene-d5	37.4	50.0	ug/L	75	(36%-115%)
Phenol-d5	29.1	100	ug/L	29	(15%-91%)
p-Terphenyl-d14	39.9	50.0	ug/L	80	(36%-121%)

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		87.1	ug/L	6.90	23.0
120-82-1	1,2,4-Trichlorobenzene		84.0	ug/L	6.90	23.0
95-50-1	1,2-Dichlorobenzene		80.5	ug/L	6.90	23.0
122-66-7	Azobenzene		88.8	ug/L	6.90	23.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		76.8	ug/L	6.90	23.0
106-46-7	1,4-Dichlorobenzene		79.0	ug/L	6.90	23.0
123-91-1	1,4-Dioxane		71.2	ug/L	6.90	23.0
90-12-0	1-Methylnaphthalene		88.9	ug/L	0.690	2.30
58-90-2	2,3,4,6-Tetrachlorophenol		103	ug/L	6.90	23.0
95-95-4	2,4,5-Trichlorophenol		96.4	ug/L	6.90	23.0
88-06-2	2,4,6-Trichlorophenol		101	ug/L	6.90	23.0
120-83-2	2,4-Dichlorophenol		94.8	ug/L	6.90	23.0
105-67-9	2,4-Dimethylphenol		82.8	ug/L	6.90	23.0
51-28-5	2,4-Dinitrophenol		99.1	ug/L	11.5	46.0
121-14-2	2,4-Dinitrotoluene		111	ug/L	6.90	23.0
606-20-2	2,6-Dinitrotoluene		98.8	ug/L	6.90	23.0
91-58-7	2-Chloronaphthalene		87.7	ug/L	0.943	2.30
95-57-8	2-Chlorophenol		84.4	ug/L	6.90	23.0
534-52-1	2-Methyl-4,6-dinitrophenol		93.6	ug/L	6.90	23.0
91-57-6	2-Methylnaphthalene		90.5	ug/L	0.690	2.30
88-75-5	2-Nitrophenol		90.1	ug/L	6.90	23.0
91-94-1	3,3'-Dichlorobenzidine		116	ug/L	6.90	23.0
101-55-3	4-Bromophenylphenylether		93.8	ug/L	6.90	23.0
59-50-7	Parachlorometa cresol		99.7	ug/L	6.90	23.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		104	ug/L	7.59	23.0
7005-72-3	4-Chlorophenylphenylether		123	ug/L	6.90	23.0
100-02-7	4-Nitrophenol		38.3	ug/L	6.90	23.0
83-32-9	Acenaphthene		98.4	ug/L	0.690	2.30
208-96-8	Acenaphthylene		95.4	ug/L	0.690	2.30
62-53-3	Aniline		81.4	ug/L	9.66	23.0
120-12-7	Anthracene		97.5	ug/L	0.690	2.30
1912-24-9	Atrazine		109	ug/L	6.90	23.0
92-87-5	Benzidine		94.1	ug/L	8.97	23.0
56-55-3	Benzo(a)anthracene		100	ug/L	0.690	2.30
50-32-8	Benzo(a)pyrene		106	ug/L	0.690	2.30
205-99-2	Benzo(b)fluoranthene		104	ug/L	0.690	2.30
191-24-2	Benzo(ghi)perylene		100	ug/L	0.690	2.30

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		109	ug/L	0.690	2.30
65-85-0	Benzoic acid		119	ug/L	13.8	46.0
100-51-6	Benzyl alcohol		80.9	ug/L	6.90	23.0
85-68-7	Butylbenzylphthalate		85.4	ug/L	6.90	23.0
218-01-9	Chrysene		110	ug/L	0.690	2.30
84-74-2	Di-n-butylphthalate		93.5	ug/L	6.90	23.0
117-84-0	Di-n-octylphthalate		74.3	ug/L	6.90	23.0
53-70-3	Dibenzo(a,h)anthracene		104	ug/L	0.690	2.30
132-64-9	Dibenzofuran		94.1	ug/L	6.90	23.0
84-66-2	Diethylphthalate		104	ug/L	6.90	23.0
131-11-3	Dimethylphthalate		100	ug/L	6.90	23.0
88-85-7	Dinoseb	U	23.0	ug/L	6.90	23.0
122-39-4	Diphenylamine		91.4	ug/L	6.90	23.0
206-44-0	Fluoranthene		99.9	ug/L	0.690	2.30
86-73-7	Fluorene		102	ug/L	0.690	2.30
118-74-1	Hexachlorobenzene		95.3	ug/L	6.90	23.0
87-68-3	Hexachlorobutadiene		83.7	ug/L	6.90	23.0
77-47-4	Hexachlorocyclopentadiene		66.3	ug/L	6.90	23.0
67-72-1	Hexachloroethane		74.0	ug/L	6.90	23.0
193-39-5	Indeno(1,2,3-cd)pyrene		97.7	ug/L	0.690	2.30
78-59-1	Isophorone		89.8	ug/L	8.05	23.0
62-75-9	N-Methyl-N-nitrosomethylamine		68.1	ug/L	6.90	23.0
924-16-3	N-Nitrosodi-n-butylamine	U	23.0	ug/L	6.90	23.0
55-18-5	N-Nitrosodiethylamine	U	23.0	ug/L	6.90	23.0
621-64-7	N-Nitrosodi--n-propylamine		95.4	ug/L	6.90	23.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		96.0	ug/L	6.90	23.0
91-20-3	Naphthalene		90.0	ug/L	0.690	2.30
98-95-3	Nitrobenzene		88.3	ug/L	6.90	23.0
608-93-5	Pentachlorobenzene	U	23.0	ug/L	6.90	23.0
87-86-5	Pentachlorophenol		103	ug/L	6.90	23.0
85-01-8	Phenanthrene		98.4	ug/L	0.690	2.30
108-95-2	Phenol		48.6	ug/L	6.90	23.0
129-00-0	Pyrene		98.6	ug/L	0.690	2.30
110-86-1	Pyridine		50.6	ug/L	6.90	23.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		86.8	ug/L	6.90	23.0
111-91-1	bis(2-Chloroethoxy)methane		89.1	ug/L	6.90	23.0
111-44-4	bis(2-Chloroethyl) ether		86.7	ug/L	6.90	23.0
117-81-7	bis(2-Ethylhexyl)phthalate		79.7	ug/L	6.90	23.0

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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		80.8	ug/L	8.51	23.0
99-09-2	3-Nitroaniline		119	ug/L	6.90	23.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		77.5	ug/L	6.90	23.0
88-74-4	2-Nitroaniline		94.2	ug/L	6.90	23.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		103	ug/L	6.90	23.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	233	230	ug/L	101	(32%-124%)
2-Fluorobiphenyl	95.8	115	ug/L	83	(32%-112%)
2-Fluorophenol	124	230	ug/L	54	(15%-88%)
Nitrobenzene-d5	88.7	115	ug/L	77	(36%-115%)
Phenol-d5	95.4	230	ug/L	42	(15%-91%)
p-Terphenyl-d14	98.8	115	ug/L	86	(36%-121%)

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812334	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		82.7	ug/L	6.90	23.0
120-82-1	1,2,4-Trichlorobenzene		80.4	ug/L	6.90	23.0
95-50-1	1,2-Dichlorobenzene		79.5	ug/L	6.90	23.0
122-66-7	Azobenzene		81.2	ug/L	6.90	23.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		76.6	ug/L	6.90	23.0
106-46-7	1,4-Dichlorobenzene		78.3	ug/L	6.90	23.0
123-91-1	1,4-Dioxane		62.3	ug/L	6.90	23.0
90-12-0	1-Methylnaphthalene		83.6	ug/L	0.690	2.30
58-90-2	2,3,4,6-Tetrachlorophenol		93.3	ug/L	6.90	23.0
95-95-4	2,4,5-Trichlorophenol		85.0	ug/L	6.90	23.0
88-06-2	2,4,6-Trichlorophenol		91.5	ug/L	6.90	23.0
120-83-2	2,4-Dichlorophenol		84.8	ug/L	6.90	23.0
105-67-9	2,4-Dimethylphenol		72.9	ug/L	6.90	23.0
51-28-5	2,4-Dinitrophenol		93.1	ug/L	11.5	46.0
121-14-2	2,4-Dinitrotoluene		102	ug/L	6.90	23.0
606-20-2	2,6-Dinitrotoluene		90.1	ug/L	6.90	23.0
91-58-7	2-Chloronaphthalene		81.2	ug/L	0.943	2.30
95-57-8	2-Chlorophenol		76.5	ug/L	6.90	23.0
534-52-1	2-Methyl-4,6-dinitrophenol		86.2	ug/L	6.90	23.0
91-57-6	2-Methylnaphthalene		84.2	ug/L	0.690	2.30
88-75-5	2-Nitrophenol		82.3	ug/L	6.90	23.0
91-94-1	3,3'-Dichlorobenzidine		113	ug/L	6.90	23.0
101-55-3	4-Bromophenylphenylether		85.8	ug/L	6.90	23.0
59-50-7	Parachlorometa cresol		88.8	ug/L	6.90	23.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		93.7	ug/L	7.59	23.0
7005-72-3	4-Chlorophenylphenylether		111	ug/L	6.90	23.0
100-02-7	4-Nitrophenol		37.3	ug/L	6.90	23.0
83-32-9	Acenaphthene		90.3	ug/L	0.690	2.30
208-96-8	Acenaphthylene		87.0	ug/L	0.690	2.30
62-53-3	Aniline		78.2	ug/L	9.66	23.0
120-12-7	Anthracene		90.2	ug/L	0.690	2.30
1912-24-9	Atrazine		100	ug/L	6.90	23.0
92-87-5	Benzidine		162	ug/L	8.97	23.0
56-55-3	Benzo(a)anthracene		92.4	ug/L	0.690	2.30
50-32-8	Benzo(a)pyrene		97.1	ug/L	0.690	2.30
205-99-2	Benzo(b)fluoranthene		96.3	ug/L	0.690	2.30
191-24-2	Benzo(ghi)perylene		89.6	ug/L	0.690	2.30

**Semi-Volatile
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Sample Summary**

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812334	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		100	ug/L	0.690	2.30
65-85-0	Benzoic acid		111	ug/L	13.8	46.0
100-51-6	Benzyl alcohol		72.7	ug/L	6.90	23.0
85-68-7	Butylbenzylphthalate		76.2	ug/L	6.90	23.0
218-01-9	Chrysene		101	ug/L	0.690	2.30
84-74-2	Di-n-butylphthalate		84.7	ug/L	6.90	23.0
117-84-0	Di-n-octylphthalate		64.1	ug/L	6.90	23.0
53-70-3	Dibenzo(a,h)anthracene		91.8	ug/L	0.690	2.30
132-64-9	Dibenzofuran		85.8	ug/L	6.90	23.0
84-66-2	Diethylphthalate		94.9	ug/L	6.90	23.0
131-11-3	Dimethylphthalate		91.7	ug/L	6.90	23.0
88-85-7	Dinoseb	U	23.0	ug/L	6.90	23.0
122-39-4	Diphenylamine		83.2	ug/L	6.90	23.0
206-44-0	Fluoranthene		91.3	ug/L	0.690	2.30
86-73-7	Fluorene		92.8	ug/L	0.690	2.30
118-74-1	Hexachlorobenzene		87.2	ug/L	6.90	23.0
87-68-3	Hexachlorobutadiene		83.3	ug/L	6.90	23.0
77-47-4	Hexachlorocyclopentadiene		64.3	ug/L	6.90	23.0
67-72-1	Hexachloroethane		76.2	ug/L	6.90	23.0
193-39-5	Indeno(1,2,3-cd)pyrene		87.3	ug/L	0.690	2.30
78-59-1	Isophorone		80.3	ug/L	8.05	23.0
62-75-9	N-Methyl-N-nitrosomethylamine		60.7	ug/L	6.90	23.0
924-16-3	N-Nitrosodi-n-butylamine	U	23.0	ug/L	6.90	23.0
55-18-5	N-Nitrosodiethylamine	U	23.0	ug/L	6.90	23.0
621-64-7	N-Nitrosodi--n-propylamine		86.1	ug/L	6.90	23.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		86.7	ug/L	6.90	23.0
91-20-3	Naphthalene		84.8	ug/L	0.690	2.30
98-95-3	Nitrobenzene		79.4	ug/L	6.90	23.0
608-93-5	Pentachlorobenzene	U	23.0	ug/L	6.90	23.0
87-86-5	Pentachlorophenol		93.0	ug/L	6.90	23.0
85-01-8	Phenanthrene		90.2	ug/L	0.690	2.30
108-95-2	Phenol		42.9	ug/L	6.90	23.0
129-00-0	Pyrene		90.2	ug/L	0.690	2.30
110-86-1	Pyridine		53.1	ug/L	6.90	23.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		78.9	ug/L	6.90	23.0
111-91-1	bis(2-Chloroethoxy)methane		81.1	ug/L	6.90	23.0
111-44-4	bis(2-Chloroethyl) ether		77.8	ug/L	6.90	23.0
117-81-7	bis(2-Ethylhexyl)phthalate		68.8	ug/L	6.90	23.0

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

Page 3 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812334	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		73.4	ug/L	8.51	23.0
99-09-2	3-Nitroaniline		113	ug/L	6.90	23.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		69.2	ug/L	6.90	23.0
88-74-4	2-Nitroaniline		86.1	ug/L	6.90	23.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		98.7	ug/L	6.90	23.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	217	230	ug/L	94	(32%-124%)
2-Fluorobiphenyl	89.6	115	ug/L	78	(32%-112%)
2-Fluorophenol	111	230	ug/L	48	(15%-88%)
Nitrobenzene-d5	81.8	115	ug/L	71	(36%-115%)
Phenol-d5	86.0	230	ug/L	37	(15%-91%)
p-Terphenyl-d14	91.7	115	ug/L	80	(36%-121%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532**

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: 1675694

Prep Batch Number: 1675692

Sample Analysis

Sample ID	Client ID
425532003	425532003 (CAWA-17-133327)
425532004	425532004 (CAWA-17-133335)
1203815298	Interference Check Sample (ICS)
1203815291	Method Blank (MB)
1203815292	Laboratory Control Sample (LCS)
1203815293	425532003(CAWA-17-133327) Matrix Spike (MS)
1203815294	425532003(CAWA-17-133327) 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 425532003 (CAWA-17-133327) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard Area Acceptance

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

Retention Time

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

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

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

Method Comments

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

Additional Comments

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

Perchlorate Isotope Ratio

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

System Configuration

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

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

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

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2017-1748 GEL Work Order: 425532

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 24 JUN 2017

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327Date Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 425532003Date Filtered: 20-JUN-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	0.265	ug/L		1	21-JUN-17 15:45	per0621020a
	Perchlorate Isotope Ratio			2.84			1	21-JUN-17 15:45	per0621020a
14797-73-0	Perchlorate-101	.05	.2	0.276	ug/L		1	21-JUN-17 15:45	per0621020a
	Perchlorate-O(18)			0.442	ug/L		1	21-JUN-17 15:45	per0621020a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133335Date Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 425532004Date Filtered: 20-JUN-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	0.253	ug/L		1	21-JUN-17 16:51	per0621026a
	Perchlorate Isotope Ratio			2.98			1	21-JUN-17 16:51	per0621026a
14797-73-0	Perchlorate-101	.05	.2	0.252	ug/L		1	21-JUN-17 16:51	per0621026a
	Perchlorate-O(18)			0.440	ug/L		1	21-JUN-17 16:51	per0621026a

^ 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): 2017-1748

Extract Batch Code: 1675692

Date Filtered: 20-JUN-17

Matrix: WATER

Sample ID: 1203815292

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	95		85 - 115
Perchlorate Isotope Ratio		2.86				-
Perchlorate-101	0.200	.195	ug/L	98		85 - 115
Perchlorate-O(18)		.476	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): 2017-1748

Extract Batch Code: 1675692

Date Extracted: 20-JUN-17

GEL MS/PS ID: 1203815293

Client ID: CAWA-17-133327

GEL MSD/PSD ID: 1203815294

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	0.265	ug/L	0.434	85	.487	111	11	30	75 - 125
Perchlorate Isotope Ratio	0	2.84		2.91		3.04		4		-
Perchlorate-101	0.200	0.276	ug/L	0.442	83	.474	99	7	30	75 - 125
Perchlorate-O(18)	0	0.442	ug/L	0.455		.436		4		-

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 20-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815291Date Filtered: 20-JUN-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	0.200	ug/L	U	1	21-JUN-17 15:12	per0621017a
	Perchlorate Isotope Ratio						1	21-JUN-17 15:12	per0621017a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	21-JUN-17 15:12	per0621017a
	Perchlorate-O(18)			0.499	ug/L		1	21-JUN-17 15:12	per0621017a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 20-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815292Date Filtered: 20-JUN-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	0.190	ug/L	J	1	21-JUN-17 15:23	per0621018a
	Perchlorate Isotope Ratio			2.86			1	21-JUN-17 15:23	per0621018a
14797-73-0	Perchlorate-101	.05	.2	0.195	ug/L	J	1	21-JUN-17 15:23	per0621018a
	Perchlorate-O(18)			0.476	ug/L		1	21-JUN-17 15:23	per0621018a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815298Date Filtered: 20-JUN-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	0.194	ug/L	J	1	21-JUN-17 15:34	per0621019a
	Perchlorate Isotope Ratio			2.8			1	21-JUN-17 15:34	per0621019a
14797-73-0	Perchlorate-101	.05	.2	0.205	ug/L		1	21-JUN-17 15:34	per0621019a
	Perchlorate-O(18)			0.463	ug/L		1	21-JUN-17 15:34	per0621019a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327MSDate Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815293Date Filtered: 20-JUN-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	0.434	ug/L		1	21-JUN-17 15:56	per0621021a
	Perchlorate Isotope Ratio			2.91			1	21-JUN-17 15:56	per0621021a
14797-73-0	Perchlorate-101	.05	.2	0.442	ug/L		1	21-JUN-17 15:56	per0621021a
	Perchlorate-O(18)			0.455	ug/L		1	21-JUN-17 15:56	per0621021a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327MSDDate Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815294Date Filtered: 20-JUN-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	0.487	ug/L		1	21-JUN-17 16:07	per0621022a
	Perchlorate Isotope Ratio			3.04			1	21-JUN-17 16:07	per0621022a
14797-73-0	Perchlorate-101	.05	.2	0.474	ug/L		1	21-JUN-17 16:07	per0621022a
	Perchlorate-O(18)			0.436	ug/L		1	21-JUN-17 16:07	per0621022a

^ 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 #: 2017-1748
Work Order #: 425532**

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: 1674747

Prep Batch Number: 1674744

Sample Analysis

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

Sample ID	Client ID
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203813029	Method Blank (MB)
1203813030	Laboratory Control Sample (LCS)
1203813031	425417001(CAWA-17-133279) Matrix Spike (MS)
1203813032	425417001(CAWA-17-133279) 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 1203813029 (MB), 1203813030 (LCS), 1203813031 (CAWA-17-133279MS), 1203813032 (CAWA-17-133279MSD), 425532002 (CAWA-17-133299) and 425532006 (CAWA-17-133337) 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 425417001 (CAWA-17-133279) 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 the matrix spike duplicate (MSD). While the MSD exhibited a high bias, both the LCS and MS met acceptance limits for (insert compound name). Since (insert compound name) was not detected in the associated samples, the data are reported.

Sample	Analyte	Value
1203813032 (CAWA-17-133279MSD)	TATB	153* (38%-149%)

The MS and/or MSD (See Below) did not meet acceptance criteria for the recovery of spiked analytes. The recoveries are attributed to over range concentrations of target analytes in the parent sample.

Sample	Analyte	Value
1203813032 (CAWA-17-133279MSD)	RDX	151* (57%-125%)

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information**Holding Time Specifications**

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

holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

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

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

Miscellaneous Information

Data Exception (DER) Documentation

Data exception report (DER) 1647828 was generated for sample 1203813032 (CAWA-17-133279MSD) in this SDG/batch.

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 LCMSMS.

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: 2017-1748 GEL Work Order: 425532

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: 05 JUL 2017

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133299

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532002

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625067.wiff

Date Analyzed: 28-JUN-17 06:01

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.262	U	0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.262	U	0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.262	U	0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.262	U	0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.262	U	0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.262	U	0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.262	U	0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.262	U	0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.262	U	0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.262	U	0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.262	U	0.0838	0.262
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.262	U	0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.524	U	0.0838	0.524
<i>479-45-8</i>	<i>Tetryl</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133299

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532002

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	.524	U	0.105	0.524
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.524	U	0.157	0.524
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1.05	U	0.314	1.05
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.05	U	0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.314	1.05
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.62	U	0.524	2.62
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.62	U	0.524	2.62
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133337

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532006

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625068.wiff

Date Analyzed: 28-JUN-17 06:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.262	U	0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.262	U	0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.262	U	0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.262	U	0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.262	U	0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.262	U	0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.262	U	0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.262	U	0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.262	U	0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.262	U	0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.262	U	0.0838	0.262
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.262	U	0.0838	0.262
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.524	U	0.0838	0.524
<i>479-45-8</i>	<i>Tetryl</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133337

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532006

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	.524	U	0.105	0.524
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.524	U	0.157	0.524
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1.05	U	0.314	1.05
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.05	U	0.314	1.05
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.314	1.05
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.62	U	0.524	2.62
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.62	U	0.524	2.62
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

Quality Control Summary

High Explosives Surrogate Recovery Summary**Lab Name:** GEL Laboratories LLC**GEL Job No (SDG):** 2017-1748**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425532002	CAWA-17-133299	101	55 - 115	
425532006	CAWA-17-133337	97	55 - 115	
1203813029	MB for batch 1674744	96	55 - 115	
1203813030	LCS for batch 1674744	109	55 - 115	
1203813031	CAWA-17-133279MS	84	55 - 115	
1203813032	CAWA-17-133279MSD	88	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) 2017-1748

Extract Batch Code: 1674744

Date Extracted: 16-JUN-17

GEL LCS ID: 1203813030

GEL LCSDUP ID: .

Analysis Date/Time: 28-JUN-17 08:57

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
RDX	5	3.81	76					64 - 117
TATB	2.5	2.74	110					47 - 135
Tetryl	5	3.74	75					64 - 122
m-Dinitrobenzene	5	4.86	97					74 - 117
m-Nitrotoluene	5	5.02	100					66 - 114
o-Nitrotoluene	5	3.86	77					64 - 115
p-Nitrotoluene	5	4.88	98					66 - 127
tris(o-cresyl) phosphate	5	3.77	75					43 - 104
PETN	5	4.95	99					57 - 126
1,3,5-Trinitrobenzene	5	4.57	91					70 - 110
2,4,6-Trinitrotoluene	5	5.18	104					69 - 113
2,4-Diamino-6-nitrotoluene	5	4.31	86					50 - 121
2,4-Dinitrotoluene	5	4.53	91					71 - 110
2,6-Diamino-4-nitrotoluene	5	3.78	76					53 - 127
2,6-Dinitrotoluene	5	4.62	92					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.63	93					70 - 112
3,5-Dinitroaniline	5	5.48	110					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.55	91					74 - 116
HMX	5	4.38	88					58 - 113
Nitrobenzene	5	4.29	86					64 - 115

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-17-133279

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Extract Batch Code: 1674744

Date Extracted: 16-JUN-17

GEL Spike ID: 1203813031

GEL SpikeDup ID: 1203813032

Analysis Date/Time: 28-JUN-17 00:54

MSD Analysis Date/Time: 28-JUN-17 01:28

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	5.37634	0	5.06	94	5.13	93	1	30	67 - 111
2,4,6-Trinitrotoluene	5.37634	.112	4.68	85	5.29	94	12	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.37634	0	4.86	90	5.52	100	13	30	50 - 121
2,4-Dinitrotoluene	5.37634	.0448	4.64	86	5.14	93	10	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.37634	0	6.26	116	6.63	121	6	30	53 - 127
2,6-Dinitrotoluene	5.37634	0	4.36	81	4.8	87	10	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.37634	.99	4.97	74	5.76	87	15	30	67 - 115
3,5-Dinitroaniline	5.37634	.198	5.87	106	6.11	108	4	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.37634	1.44	5.72	80	5.83	80	2	30	65 - 120
HMX	5.37634	15.2	18.8	68	18.8	66	0	30	44 - 128
Nitrobenzene	5.37634	0	4.54	84	4	73	12	30	62 - 116
PETN	5.37634	0	5.11	95	5.51	100	7	30	51 - 131
RDX	5.37634	16.1	21.4	99	24.4	151 *	13	30	57 - 125
TATB	2.68817	0	3.6	134	4.21	153 *	16	30	38 - 149
Tetryl	5.37634	0	4.27	79	4.32	79	1	30	50 - 126
m-Dinitrobenzene	5.37634	0	5.51	102	5.57	101	1	30	74 - 117
m-Nitrotoluene	5.37634	0	3.83	71	4.64	84	19	30	59 - 120
o-Nitrotoluene	5.37634	.0183	3.4	63	3.71	67	9	30	56 - 119
p-Nitrotoluene	5.37634	0	3.64	68	3.94	72	8	30	61 - 129
tris(o-cresyl) phosphate	5.37634	.0926	4.8	88	4.95	88	3	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 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813029

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625055.wiff

Date Analyzed: 27-JUN-17 23:12

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.25	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.25	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.25	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.25	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.25	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.25	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.25	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.25	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.25	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.25	U	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.25	U	0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.25	U	0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.5	U	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: MB for batch 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813029

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	.5	U	0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.5	U	0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1	U	0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1	U	0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1	U	0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.5	U	0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.5	U	0.500	2.50
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813030

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625072.wiff

Date Analyzed: 28-JUN-17 08:57

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	2.74		0.300	1.00
3058-38-6	TATB				
479-45-8	Tetryl	3.74		0.080	0.500
479-45-8	Tetryl				
78-30-8	tris(o-cresyl) phosphate	3.77		0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	3.78		0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
121-82-4	RDX	3.81		0.080	0.250
121-82-4	RDX				
88-72-2	o-Nitrotoluene	3.86		0.082	0.250
88-72-2	o-Nitrotoluene				
98-95-3	Nitrobenzene	4.29		0.080	0.250
98-95-3	Nitrobenzene				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.31		0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				
2691-41-0	HMX	4.38		0.080	0.250
2691-41-0	HMX				
121-14-2	2,4-Dinitrotoluene	4.53		0.080	0.250
121-14-2	2,4-Dinitrotoluene				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.55		0.080	0.250
19406-51-0	4-Amino-2,6-dinitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	4.57		0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
606-20-2	2,6-Dinitrotoluene	4.62		0.080	0.250
606-20-2	2,6-Dinitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813030

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
35572-78-2	2-Amino-4,6-dinitrotoluene	4.63		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	4.86		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
99-99-0	p-Nitrotoluene	4.88		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
78-11-5	PETN	4.95		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-08-1	m-Nitrotoluene	5.02		0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	5.18		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.48		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813031

Sample Amount 930 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625058.wiff

Date Analyzed: 28-JUN-17 00:54

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
88-72-2	o-Nitrotoluene	3.4		0.0882	0.269
88-72-2	<i>o</i> -Nitrotoluene				
3058-38-6	TATB	3.6		0.323	1.08
3058-38-6	<i>TATB</i>				
99-99-0	p-Nitrotoluene	3.64		0.161	0.538
99-99-0	<i>p</i> -Nitrotoluene				
99-08-1	m-Nitrotoluene	3.83		0.086	0.269
99-08-1	<i>m</i> -Nitrotoluene				
479-45-8	Tetryl	4.27		0.086	0.538
479-45-8	<i>Tetryl</i>				
606-20-2	2,6-Dinitrotoluene	4.36		0.086	0.269
606-20-2	<i>2,6-Dinitrotoluene</i>				
98-95-3	Nitrobenzene	4.54		0.086	0.269
98-95-3	<i>Nitrobenzene</i>				
121-14-2	2,4-Dinitrotoluene	4.64		0.086	0.269
121-14-2	<i>2,4-Dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.68		0.086	0.269
118-96-7	<i>2,4,6-Trinitrotoluene</i>				
78-30-8	tris(<i>o</i> -cresyl) phosphate	4.8		0.323	1.08
78-30-8	<i>tris(o-cresyl) phosphate</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.86		0.538	2.69
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.97		0.086	0.269
35572-78-2	<i>2-Amino-4,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	5.06		0.086	0.269
99-35-4	<i>1,3,5-Trinitrobenzene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813031

Sample Amount 930 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	5.11		0.108	0.538
<i>78-11-5</i>	<i>PETN</i>				
99-65-0	m-Dinitrobenzene	5.51		0.086	0.269
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.72		0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.87		0.323	1.08
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.26		0.538	2.69
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
2691-41-0	HMX	18.8		0.086	0.269
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	21.4		0.086	0.269
<i>121-82-4</i>	<i>RDX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813032

Sample Amount 910 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625059.wiff

Date Analyzed: 28-JUN-17 01:28

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
88-72-2	o-Nitrotoluene	3.71		0.0901	0.275
88-72-2	<i>o</i> -Nitrotoluene				
99-99-0	p-Nitrotoluene	3.94		0.165	0.549
99-99-0	<i>p</i> -Nitrotoluene				
98-95-3	Nitrobenzene	4		0.0879	0.275
98-95-3	<i>Nitrobenzene</i>				
3058-38-6	TATB	4.21		0.330	1.10
3058-38-6	<i>TATB</i>				
479-45-8	Tetryl	4.32		0.0879	0.549
479-45-8	<i>Tetryl</i>				
99-08-1	m-Nitrotoluene	4.64		0.0879	0.275
99-08-1	<i>m</i> -Nitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.8		0.0879	0.275
606-20-2	<i>2,6-Dinitrotoluene</i>				
78-30-8	tris(o-cresyl) phosphate	4.95		0.330	1.10
78-30-8	<i>tris(o-cresyl) phosphate</i>				
99-35-4	1,3,5-Trinitrobenzene	5.13		0.0879	0.275
99-35-4	<i>1,3,5-Trinitrobenzene</i>				
121-14-2	2,4-Dinitrotoluene	5.14		0.0879	0.275
121-14-2	<i>2,4-Dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	5.29		0.0879	0.275
118-96-7	<i>2,4,6-Trinitrotoluene</i>				
78-11-5	PETN	5.51		0.110	0.549
78-11-5	<i>PETN</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.52		0.549	2.75
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813032

Sample Amount 910 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	5.57		0.0879	0.275
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.76		0.0879	0.275
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.83		0.0879	0.275
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	6.11		0.330	1.10
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.63		0.549	2.75
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
2691-41-0	HMX	18.8		0.0879	0.275
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	24.4		0.0879	0.275
<i>121-82-4</i>	<i>RDX</i>				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1748Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 16:29GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS7Column: 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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.69
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1748Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 17:03GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
o-Nitrotoluene	0	1.41
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 26-JUN-17 21:36

GEL Data File: EXP0625010.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	1.48
tris(o-cresyl) phosphate	0	6.15
TATB	0	1.57
3,5-Dinitroaniline	0	1.82
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	1.65
DNX	0	2.65
MNX	0	2.03
TNX	0	2.15
1,3,5-Trinitrobenzene	0	1.85
2,4,6-Trinitrotoluene	0	1.65
2,4-Dinitrotoluene	0	1.35
2,6-Dinitrotoluene	0	1.18
2-Amino-4,6-dinitrotoluene	0	1.51
4-Amino-2,6-dinitrotoluene	0	1.49
HMX	0	2.19
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	2.17
RDX	0	2.09
Tetryl	0	1.99
m-Dinitrobenzene	0	1.4
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.58
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 26-JUN-17 23:52

GEL Data File: EXP0625014.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitroglycerin	0	2.25
PETN	0	1.68
RDX	0	1.77
Tetryl	0	1.43
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.62
p-Nitrotoluene	0	5
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	6.41
TATB	0	0
3,5-Dinitroaniline	0	1.36
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	1.77
MNX	0	1.47
TNX	0	1.56
1,3,5-Trinitrobenzene	0	1.24
2,4,6-Trinitrotoluene	0	1.29
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	1.27
4-Amino-2,6-dinitrotoluene	0	1.32
HMX	0	1.93
Nitrobenzene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 27-JUN-17 02:09

GEL Data File: EXP0625018.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.36
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 27-JUN-17 03:17

GEL Data File: EXP0625020.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	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	3.68
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.22
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 27-JUN-17 03:51

GEL Data File: EXP0625021.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.71
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 27-JUN-17 08:58

GEL Data File: EXP0625030.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	1.31
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
Nitroglycerin	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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 27-JUN-17 09:33

GEL Data File: EXP0625031.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.14
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 27-JUN-17 10:41

GEL Data File: EXP0625033.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.92
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.75

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 27-JUN-17 16:56

GEL Data File: EXP0625044.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.28
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.39
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 27-JUN-17 22:03

GEL Data File: EXP0625053.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	3.81
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.9
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
Nitroglycerin	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): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 28-JUN-17 04:53

GEL Data File: EXP0625065.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.29
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.7
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 28-JUN-17 07:44

GEL Data File: EXP0625070.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.16
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	.52
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK14

Analysis Date: 28-JUN-17 15:39

GEL Data File: EXP0625083.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.54
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.99
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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 03-JUL-17	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LC-MS/MS	Test / Method: SW846 3535A/8330B	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1674747	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 425417(2017-1734),425520(2017-1749),425532(2017-1748) Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). 1203813032 (CAWA-17-133279MSD) recovered TATB at 153% (38%-149%) and RDX at 151% (57%-125%).		1. While the MSD exhibited a high bias, both the LCS and MS met acceptance limits for TATB. TATB was not detected in the associated samples. The biased high recovery in the MSD is attributed to an over range concentration of RDX in the parent sample. The data are reported.	

Originator's Name:
Michael Penny 03-JUL-17

Data Validator/Group Leader:
Charles Wilson 05-JUL-17

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532

Sample ID	Client ID
425532002	CAWA-17-133299
425532003	CAWA-17-133327
425532004	CAWA-17-133335
425532006	CAWA-17-133337
1203812396	Method Blank (MB) ICP
1203812397	Laboratory Control Sample (LCS)
1203812400	425532003(CAWA-17-133327L) Serial Dilution (SD)
1203812398	425532003(CAWA-17-133327D) Sample Duplicate (DUP)
1203812399	425532003(CAWA-17-133327S) Matrix Spike (MS)
1203812439	Method Blank (MB) ICP-MS
1203812440	Laboratory Control Sample (LCS)
1203812443	425532003(CAWA-17-133327L) Serial Dilution (SD)
1203812441	425532003(CAWA-17-133327D) Sample Duplicate (DUP)
1203812442	425532003(CAWA-17-133327S) Matrix Spike (MS)
1203813067	Method Blank (MB) CVAA
1203813068	Laboratory Control Sample (LCS)
1203813073	425532002(CAWA-17-133299L) Serial Dilution (SD)
1203813069	425532002(CAWA-17-133299D) Sample Duplicate (DUP)
1203813071	425532002(CAWA-17-133299S) Matrix Spike (MS)

Sample Analysis

Samples 425532002,003,004 and 006 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1674452, 1674473, 1674758 and 1680103
Prep Batch :	1674451, 1674472 and 1674757
Standard Operating Procedures:	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 30, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

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

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

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

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425532003 (CAWA-17-133327) and 425532004 (CAWA-17-133335)-ICP.

ICSA/ICSAB Statement

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

Continuing Calibration Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 425532003 (CAWA-17-133327)-ICP and ICP-MS and 425532002 (CAWA-17-133299)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality

control acceptance criteria for percent recoveries for all applicable analytes.

Duplicate Relative Percent Difference (RPD) Statement

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

Serial Dilution % Difference Statement

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

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Additional Comments

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

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

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

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the

requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2017-1748 GEL Work Order: 425532

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: 10 JUL 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532002**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133299**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:11	061917W1-4	1674758

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532003**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133327**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:20	061917W1-4	1674758

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425532003

BASIS: As Received

DATE COLLECTED 13-JUN-17

CLIENT ID: CAWA-17-133327

LEVEL: Low

DATE RECEIVED 15-JUN-17

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-38-2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-39-3	Barium	13.2	ug/L		1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-70-2	Calcium	9160	ug/L		50	200	200	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7439-95-4	Magnesium	2830	ug/L		110	300	300	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-98-7	Molybdenum	0.607	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-09-7	Potassium	919	ug/L		50	150	150	1	P	HSC	06/28/17 15:18	062817-1	1674452
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7631-86-9	Silica	55900	ug/L		53	213	213	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-23-5	Sodium	7520	ug/L		100	300	300	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-24-6	Strontium	42.3	ug/L		1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-61-1	Uranium	0.372	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-62-2	Vanadium	2.65	ug/L	J	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-66-6	Zinc	9.03	ug/L	J	3.3	10	10	1	P	HSC	06/29/17 10:37	062917-2	1674452

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425532003**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133327**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	34.5	mg/L		0.453	1.24	1.24	1		TXT1	07/06/17 10:28		1680103

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674452	1674451	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674473	1674472	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532004**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133335**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:25	061917W1-4	1674758

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425532004

BASIS: As Received

DATE COLLECTED 13-JUN-17

CLIENT ID: CAWA-17-133335

LEVEL: Low

DATE RECEIVED 15-JUN-17

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-38-2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-39-3	Barium	13.5	ug/L		1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-70-2	Calcium	9500	ug/L		50	200	200	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7439-95-4	Magnesium	2960	ug/L		110	300	300	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-98-7	Molybdenum	0.602	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-09-7	Potassium	1020	ug/L		50	150	150	1	P	HSC	06/28/17 15:14	062817-1	1674452
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7631-86-9	Silica	57400	ug/L		53	213	213	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-23-5	Sodium	7940	ug/L		100	300	300	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-24-6	Strontium	43.8	ug/L		1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-61-1	Uranium	0.368	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-62-2	Vanadium	2.4	ug/L	J	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-66-6	Zinc	7.26	ug/L	J	3.3	10	10	1	P	HSC	06/29/17 10:34	062917-2	1674452

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425532004**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133335**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	35.9	mg/L		0.453	1.24	1.24	1		TXT1	07/06/17 10:28		1680103

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674452	1674451	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674473	1674472	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532006**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133337**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:26	061917W1-4	1674758

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

Quality Control Summary

METALS
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PREPARATION BLANK SUMMARY

SDG NO. 2017-1748

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>
1203812396	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	89.6	ug/L	+/-213	J	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	3.3	ug/L	+/-10	U	P	3.3	10
1203812439	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
1203813067	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

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Matrix Spike Summary

SDG NO. 2017-1748 Client ID: CAWA-17-133327S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425532003 Spike ID: 1203812399

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	4820		68	U	5000	96.4		P
Barium	ug/L	75-125	512		13.2		500	99.8		P
Beryllium	ug/L	75-125	504		1	U	500	101		P
Boron	ug/L	75-125	520		15	U	500	102		P
Calcium	ug/L	75-125	14400		9160		5000	106		P
Cobalt	ug/L	75-125	498		1	U	500	99.6		P
Copper	ug/L	75-125	512		3	U	500	102		P
Iron	ug/L	75-125	4870		30	U	5000	97.1		P
Magnesium	ug/L	75-125	7890		2830		5000	101		P
Manganese	ug/L	75-125	497		2	U	500	99.3		P
Potassium	ug/L	75-125	5980		919		5000	101		P
Silica	ug/L		68600		55900		10700	119	N/A	P
Sodium	ug/L	75-125	12800		7520		5000	106		P
Strontium	ug/L	75-125	514		42.3		500	94.4		P
Tin	ug/L	75-125	504		2.5	U	500	101		P
Vanadium	ug/L	75-125	506		2.65	J	500	101		P
Zinc	ug/L	75-125	501		9.03	J	500	98.4		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Matrix Spike Summary

SDG NO. 2017-1748 Client ID CAWA-17-133327S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425532003 Spike ID: 1203812442

<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	49.1		1	U	50	97.5		MS
Arsenic	ug/L	75-125	51.9		2	U	50	101		MS
Cadmium	ug/L	75-125	52.4		0.3	U	50	105		MS
Chromium	ug/L	75-125	51.2		3	U	50	99.6		MS
Lead	ug/L	75-125	50.7		0.5	U	50	101		MS
Nickel	ug/L	75-125	46.4		0.6	U	50	92.2		MS
Selenium	ug/L	75-125	53.8		2	U	50	107		MS
Silver	ug/L	75-125	51		0.3	U	50	102		MS
Thallium	ug/L	75-125	47		0.6	U	50	94.1		MS
Uranium	ug/L	75-125	50.1		0.372		50	99.5		MS
Molybdenum	ug/L	75-125	53.6		0.607		50	106		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1748 **Client ID:** CAWA-17-133299S**Contract:** ESHL00114 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 425532002 **Spike ID:** 1203813071

<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	2.05		0.067	U	2	102		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
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Duplicate Sample Summary

SDG No.: 2017-1748

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133327D

Matrix: WATER

Level: Low

Sample ID: 425532003

Duplicate ID: 1203812398

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68 U		68 U				P
Barium	ug/L	+/-5	13.2		13.5		2.67		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15 U		15 U				P
Calcium	ug/L	+/-20%	9160		9670		5.44		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3 U		3 U				P
Iron	ug/L		30 U		30 U				P
Magnesium	ug/L	+/-20%	2830		3010		6.37		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	919		1030		11.5		P
Silica	ug/L	+/-20%	55900		57500		2.96		P
Sodium	ug/L	+/-20%	7520		7900		4.94		P
Strontium	ug/L	+/-20%	42.3		43.9		3.79		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	2.65 J		2.4 J		10.1		P
Zinc	ug/L	+/-10	9.03 J		6.02 J		40		P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2017-1748

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133327D

Matrix: WATER

Level: Low

Sample ID: 425532003

Duplicate ID: 1203812441

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	0.607		0.609		.329		MS
Nickel	ug/L		0.6 U		0.6 U				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	0.372		0.369		.81		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2017–1748**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAWA–17–133299D**Matrix:** WATER**Level:** Low**Sample ID:** 425532002**Duplicate ID:** 1203813069**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. 2017-1748

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>
1203812397								
	Aluminum	ug/L	5000	4950		99	80-120	P
	Barium	ug/L	500	502		100	80-120	P
	Beryllium	ug/L	500	499		99.7	80-120	P
	Boron	ug/L	500	505		101	80-120	P
	Calcium	ug/L	5000	4950		99.1	80-120	P
	Cobalt	ug/L	500	502		100	80-120	P
	Copper	ug/L	500	502		100	80-120	P
	Iron	ug/L	5000	4920		98.4	80-120	P
	Magnesium	ug/L	5000	5110		102	80-120	P
	Manganese	ug/L	500	501		100	80-120	P
	Potassium	ug/L	5000	5190		104	80-120	P
	Silica	ug/L	10700	10500		98	80-120	P
	Sodium	ug/L	5000	4930		98.6	80-120	P
	Strontium	ug/L	500	480		95.9	80-120	P
	Tin	ug/L	500	501		100	80-120	P
	Vanadium	ug/L	500	502		100	80-120	P
	Zinc	ug/L	500	450		90	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1748

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>
1203812440								
	Antimony	ug/L	50	50.8		102	80-120	MS
	Arsenic	ug/L	50	51.9		104	80-120	MS
	Cadmium	ug/L	50	51.8		104	80-120	MS
	Chromium	ug/L	50	50.3		101	80-120	MS
	Lead	ug/L	50	50.8		102	80-120	MS
	Molybdenum	ug/L	50	51.7		103	80-120	MS
	Nickel	ug/L	50	47.9		95.8	80-120	MS
	Selenium	ug/L	50	53.8		108	80-120	MS
	Silver	ug/L	50	54.3		109	80-120	MS
	Thallium	ug/L	50	46.6		93.2	80-120	MS
	Uranium	ug/L	50	49.2		98.4	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1748

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>
1203813068	Mercury	ug/L	2	2.04		102	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748

Client ID: CAWA-17-133327L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 425532003

Serial Dilution ID: 1203812400

<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	68	U	340	U				P
Barium	13.2		12.6	J	4.487			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	9160		8960		2.2		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	2830		3070		8.539			P
Manganese	2	U	10	U				P
Potassium	919		1090		18.925			P
Silica	55900		54400		2.659		10	P
Sodium	7520		7260		3.453		10	P
Strontium	42.3		40.8		3.457			P
Tin	2.5	U	12.5	U				P
Vanadium	2.65	J	5	U	40.423			P
Zinc	9.03	J	23.9	J	165.113			P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748

Client ID: CAWA-17-133327L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 425532003

Serial Dilution ID: 1203812443

<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	.607		1	U	2.965			MS
Nickel	.6	U	3	U				MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.372		.39	J	4.839			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748 **Client ID:** CAWA-17-133299L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 425532002 **Serial Dilution ID:** 1203813073

<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 #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1675261

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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203814348	Method Blank (MB)
1203814349	Laboratory Control Sample (LCS)
1203814350	425532002(CAWA-17-133299) Sample Duplicate (DUP)
1203814351	425632001(CAWA-17-133300) Sample Duplicate (DUP)
1203814352	425632001(CAWA-17-133300) Post Spike (PS)
1203814353	425532002(CAWA-17-133299) 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 425532002 (CAWA-17-133299) and 425632001 (CAWA-17-133300) 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 samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages

electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1674062	Method:	WSP-CN(T)
Prep Batch :	1674061	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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203811489	Method Blank (MB)
1203811490	Laboratory Control Sample (LCS)
1203811491	425417001(CAWA-17-133279) Sample Duplicate (DUP)
1203811492	425417001(CAWA-17-133279) Matrix Spike (MS)
1203814049	425417001(CAWA-17-133279) Matrix Spike Duplicate (MSD)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 19.

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.

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 425417001 (CAWA-17-133279) 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.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Samples 1203811490 (LCS), 1203811491 (CAWA-17-133279DUP), 1203811492 (CAWA-17-133279MS) and 1203814049 (CAWA-17-133279MSD) were re-analyzed to verify the results.

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: Ion Chromatography

Analytical Batch: 1674677

Method: WSP-ANIONS

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812850	Method Blank (MB)
1203812851	Laboratory Control Sample (LCS)
1203812852	425520006(CALA-17-139174) Sample Duplicate (DUP)
1203812853	425520006(CALA-17-139174) 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 425520006 (CALA-17-139174) 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 Dilutions

The following samples 1203812852 (CALA-17-139174DUP) and 1203812853 (CALA-17-139174PS) were 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.

Sample Re-analysis

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

Miscellaneous Information

Manual Integrations

Manual integrations were not required for the samples in this SDG.

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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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:	1674632	Method:	NH3
Prep Batch :	1674631	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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812733	Method Blank (MB)
1203812734	Laboratory Control Sample (LCS)
1203812737	425532003(CAWA-17-133327) Sample Duplicate (DUP)
1203812738	425532003(CAWA-17-133327) 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 425532003 (CAWA-17-133327) 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 Kjeldahl Nitrogen		
Analytical Batch:	1673872	Method:	TKN
Prep Batch :	1673870	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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203811089	Method Blank (MB)
1203811090	Laboratory Control Sample (LCS)
1203811091	425079001(CAWA-17-133286) Sample Duplicate (DUP)
1203811092	425079001(CAWA-17-133286) 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 425079001 (CAWA-17-133286) 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

Samples 1203811089 (MB), 1203811090 (LCS), 1203811091 (CAWA-17-133286DUP), 1203811092 (CAWA-17-133286MS), 425532002 (CAWA-17-133299) and 425532006 (CAWA-17-133337) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was 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:

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Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1674641

Method: NO3NO2

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812760	Method Blank (MB)
1203812761	Laboratory Control Sample (LCS)
1203812762	425417002(CAWA-17-133307) Sample Duplicate (DUP)
1203812766	425417002(CAWA-17-133307) 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# 8.

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 425417002 (CAWA-17-133307) was selected for QC analysis.

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

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1673877	Method:	PO4
Prep Batch :	1673876	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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203811104	Method Blank (MB)
1203811105	Laboratory Control Sample (LCS)
1203811108	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203811109	425079002(CAWA-17-133314) 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 425079002 (CAWA-17-133314) 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

Samples 1203811104 (MB) and 1203811105 (LCS) were 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: 1675830

Method: TDS

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203815627	Method Blank (MB)
1203815628	Laboratory Control Sample (LCS)
1203815629	425520006(CALA-17-139174) 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 425520006 (CALA-17-139174) 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	1203815629 (CALA-17-139174DUP)	7.41* (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: 1679218

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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203823669	Laboratory Control Sample (LCS)
1203823670	425520005(CALA-17-139173) Sample Duplicate (DUP)
1203823671	426779001(BDW01-17-139079) 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 425520005 (CALA-17-139173) and 426779001 (BDW01-17-139079) 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: 1676572 **Method:** PH

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203817344	Laboratory Control Sample (LCS)
1203817346	425532004(CAWA-17-133335) 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 425532004 (CAWA-17-133335) 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
1203817346 (CAWA-17-133335DUP)	pH	Received 15-JUN-17, out of holding 13-JUN-17
425532003 (CAWA-17-133327)	pH	Received 15-JUN-17, out of holding 13-JUN-17
425532004 (CAWA-17-133335)	pH	Received 15-JUN-17, out of holding 13-JUN-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: 1676562 **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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203817292	Laboratory Control Sample (LCS)
1203817296	425532004(CAWA-17-133335) Sample Duplicate (DUP)
1203817299	425532004(CAWA-17-133335) 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 425532004 (CAWA-17-133335) 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: 2017-1748 GEL Work Order: 425532

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: 11 JUL 2017

Title: Analyst I

Sample Data Summary

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Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133299
Sample ID: 425532002
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	0.512	0.330	1.00	mg/L		1	TSM	06/23/17	0434	1675261	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/20/17	0848	1674062	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	1046	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/19/17	1339	1674061
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133327
Sample ID: 425532003
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	MAR1	06/21/17	2239	1674677	1
Chloride		1.56	0.067	0.200	mg/L		1					
Fluoride		0.119	0.033	0.100	mg/L		1					
Sulfate		1.63	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.103	0.017	0.050	mg/L	1.00	1	KLP1	06/21/17	1151	1674632	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.276	0.017	0.050	mg/L		1	AXH3	06/21/17	0821	1674641	3
PO4 "As Received"												
Phosphorus, Total as P		0.0508	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1054	1673877	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		98.6	3.40	14.3	mg/L			KLP1	06/20/17	1512	1675830	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		54.0	1.45	4.00	mg/L			RXB5	06/23/17	1601	1676562	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		112	1.00	1.00	umhos/cm		1	SXM7	07/06/17	1025	1679218	7
PH "As Received"												
pH at Temp 22.3C	H	7.80	0.010	0.100	SU		1	RXB5	06/23/17	1600	1676572	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	06/20/17	1500	1674631
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

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Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133327
Sample ID: 425532003

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133335
Sample ID: 425532004
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	MAR1	06/21/17	2308	1674677	1
Chloride		1.56	0.067	0.200	mg/L		1					
Fluoride		0.125	0.033	0.100	mg/L		1					
Sulfate		1.67	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.116	0.017	0.050	mg/L	1.00	1	KLP1	06/21/17	1153	1674632	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.415	0.017	0.050	mg/L		1	AXH3	06/21/17	0822	1674641	3
PO4 "As Received"												
Phosphorus, Total as P		0.0546	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1055	1673877	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		98.6	3.40	14.3	mg/L			KLP1	06/20/17	1512	1675830	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		56.2	1.45	4.00	mg/L			RXB5	06/23/17	1604	1676562	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		112	1.00	1.00	umhos/cm		1	SXM7	07/06/17	1027	1679218	7
PH "As Received"												
pH at Temp 22.5C	H	7.87	0.010	0.100	SU		1	RXB5	06/23/17	1602	1676572	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	06/20/17	1500	1674631
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

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Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133335
Sample ID: 425532004

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133337

Project: ESHL00114

Sample ID: 425532006

Client ID: ARSL004

Matrix: W

Collect Date: 13-JUN-17 10:35

Receive Date: 15-JUN-17

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.435	0.330	1.00	mg/L		1	TSM	06/23/17	0651	1675261	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/20/17	0849	1674062	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	1047	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/19/17	1339	1674061
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: July 11, 2017

Page 1 of 6

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

Contact: Mr. Keith Greene

Workorder: 425532

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1675261										
QC1203814350	425532002	DUP									
Total Organic Carbon Average	J	0.512	J	0.532	mg/L	3.83	^	(+/-1.00)	TSM	06/23/17	05:21
QC1203814351	425632001	DUP									
Total Organic Carbon Average	J	0.596	J	0.616	mg/L	3.3	^	(+/-1.00)		06/23/17	12:26
QC1203814349	LCS										
Total Organic Carbon Average	10.0			9.82	mg/L			98.2 (80%-120%)		06/23/17	02:53
QC1203814348	MB										
Total Organic Carbon Average			U	ND	mg/L					06/23/17	02:41
QC1203814352	425632001	PS									
Total Organic Carbon Average	10.0	J	0.596	11.0	mg/L			104 (75%-125%)		06/23/17	13:10
QC1203814353	425532002	PS									
Total Organic Carbon Average	10.0	J	0.512	11.2	mg/L			107 (75%-125%)		06/23/17	06:06
Flow Injection Analysis											
Batch	1674062										
QC1203811491	425417001	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	06/20/17	10:26
QC1203811490	LCS										
Cyanide, Total	50.0			54.1	ug/L			108 (90%-110%)		06/20/17	08:44
QC1203811489	MB										
Cyanide, Total			U	ND	ug/L					06/20/17	08:32
QC1203811492	425417001	MS									
Cyanide, Total	100	U	ND	105	ug/L			105 (90%-110%)		06/20/17	10:27

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QC Summary

Workorder: 425532

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1674062										
QC1203814049	425417001	MSD									
Cyanide, Total	100	U	ND	105	ug/L	0	105	(0%-20%)	AXH3	06/20/17	10:28
Ion Chromatography											
Batch	1674677										
QC1203812852	425520006	DUP									
Bromide		J	0.186	J	0.173	mg/L	6.85	^	(+/-0.200)	MAR1	06/21/17 21:41
Chloride			16.8		16.9	mg/L	0.776		(0%-20%)		06/23/17 16:43
Fluoride			0.548		0.549	mg/L	0.182		(0%-20%)		06/21/17 21:41
Sulfate			19.9		19.9	mg/L	0.163		(0%-20%)		06/23/17 16:43
QC1203812851	LCS										
Bromide	1.25				1.37	mg/L		110	(80%-120%)		06/21/17 20:15
Chloride	5.00				5.11	mg/L		102	(80%-120%)		
Fluoride	2.50				2.64	mg/L		106	(80%-120%)		
Sulfate	10.0				10.6	mg/L		106	(80%-120%)		
QC1203812850	MB										
Bromide			U		ND	mg/L					06/21/17 19:46
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					

GEL LABORATORIES LLC

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QC Summary

Workorder: 425532

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1674677										
QC1203812853	425520006	PS									
Bromide	1.25	J	0.186	1.52	mg/L		107	(75%-125%)	MAR1	06/21/17	22:10
Chloride	5.00		3.35	8.51	mg/L		103	(75%-125%)		06/23/17	17:12
Fluoride	2.50		0.548	3.19	mg/L		106	(75%-125%)		06/21/17	22:10
Sulfate	10.0		3.98	14.0	mg/L		100	(75%-125%)		06/23/17	17:12
Nutrient Analysis											
Batch	1673872										
QC1203811091	425079001	DUP									
Nitrogen, Total Kjeldahl		U	ND	J	0.038	mg/L	200		KLP1	06/21/17	09:54
QC1203811090	LCS										
Nitrogen, Total Kjeldahl	1.00			1.10	mg/L		110	(90%-110%)		06/21/17	09:50
QC1203811089	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/21/17	09:50
QC1203811092	425079001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.974	mg/L		97.4	(90%-110%)		06/21/17	09:55
Batch	1673877										
QC1203811108	425079002	DUP									
Phosphorus, Total as P			0.0742	0.0979	mg/L	27.5	^	(+/-0.050)	KLP1	06/20/17	10:29
QC1203811105	LCS										
Phosphorus, Total as P	1.00			0.975	mg/L		97.5	(80%-124%)		06/20/17	10:38
QC1203811104	MB										
Phosphorus, Total as P			J	0.0324	mg/L					06/20/17	10:38

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QC Summary

Workorder: 425532

Page 4 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1673877										
QC1203811109	425079002	MS									
Phosphorus, Total as P	1.00	0.0742		1.23	mg/L		116	(63%-139%)	KLP1	06/20/17	10:30
Batch	1674632										
QC1203812737	425532003	DUP									
Nitrogen, Ammonia		0.103		0.110	mg/L	6.57	^	(+/-0.050)	KLP1	06/21/17	11:52
QC1203812734	LCS										
Nitrogen, Ammonia	1.00			1.06	mg/L		106	(90%-110%)		06/21/17	11:36
QC1203812733	MB										
Nitrogen, Ammonia			J	0.0399	mg/L					06/21/17	11:35
QC1203812738	425532003	MS									
Nitrogen, Ammonia	1.00	0.103		1.08	mg/L		97.7	(90%-110%)		06/21/17	11:53
Batch	1674641										
QC1203812762	425417002	DUP									
Nitrogen, Nitrate/Nitrite		0.0507	J	0.0499	mg/L	1.59	^	(+/-0.050)	AXH3	06/21/17	08:04
QC1203812761	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.959	mg/L		95.9	(90%-110%)		06/21/17	07:57
QC1203812760	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/21/17	07:56
QC1203812766	425417002	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.0507		1.01	mg/L		95.9	(90%-110%)		06/21/17	08:05
Solids Analysis											
Batch	1675830										
QC1203815629	425520006	DUP									
Total Dissolved Solids		170		180	mg/L	7.41	*	(0%-5%)	KLP1	06/20/17	15:12

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QC Summary

Workorder: 425532

Page 5 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Solids Analysis											
Batch	1675830										
QC1203815628	LCS										
Total Dissolved Solids	300			287	mg/L		95.7	(95%-105%)	KLP1	06/20/17	15:12
QC1203815627	MB										
Total Dissolved Solids			U	ND	mg/L					06/20/17	15:12
Titration and Ion Analysis											
Batch	1676562										
QC1203817296	425532004	DUP									
Alkalinity, Total as CaCO3		56.2		55.8	mg/L	0.714		(0%-20%)	RXB5	06/23/17	16:04
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203817292	LCS										
Alkalinity, Total as CaCO3	100			110	mg/L		110	(90%-110%)		06/23/17	12:29
QC1203817299	425532004	MS									
Alkalinity, Total as CaCO3	100	56.2		158	mg/L		102	(80%-120%)		06/23/17	16:06
Batch	1676572										
QC1203817346	425532004	DUP									
pH	H	7.87	H	7.88	SU	0.127		(0%-5%)	RXB5	06/23/17	16:03
QC1203817344	LCS										
pH	7.00			7.04	SU		101	(99%-101%)		06/23/17	12:23
Batch	1679218										
QC1203823670	425520005	DUP									
Conductivity		311		310	umhos/cm	0.322		(0%-10%)	SXM7	07/06/17	10:23
QC1203823671	426779001	DUP									
Conductivity		455		455	umhos/cm	0		(0%-10%)		07/06/17	10:47

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QC Summary

Workorder: 425532

Page 6 of 6

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1679218										
QC1203823669	LCS										
Conductivity	1410			1360	umhos/cm		96.2	(95%-105%)	SXM7	07/06/17	10:12

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- 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.

July 19, 2017

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

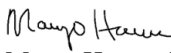
Re: LANL- WQH Water Samples
Work Order: 425532
SDG: 2017-1748

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 15, 2017, and analyzed for Explosives by LCMSMS, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package has been revised to include the results for DNX, MNX, and TNX on the Form 1s.

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

Sincerely,


Margo Herron for
Valerie Davis
Project Manager

Chain of Custody: 2017-1748
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 425532
SDG: 2017-1748

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 425532
SDG # : 2017-1748**

July 10, 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 June 15, 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>
425532001	CAWA-17-133299
425532002	CAWA-17-133299
425532003	CAWA-17-133327
425532004	CAWA-17-133335
425532005	CAWA-17-133337
425532006	CAWA-17-133337
425532007	CAWA-17-133341
425532008	CAWA-17-133344

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 Semivolatile, 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.

Margo Herron
Margo Herron for
Valerie Davis
Project Manager


List of current GEL Certifications as of 10 July 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation

General Engineering	<h1>Chain of Custody/Analysis Request</h1>	COC/Lab Request #: 2017-1748 Page 1 of 1
Charleston SC		

[illegible]

Special Instructions:					
Relinquished by:		Print Name: <u>Melissa Adams</u>	Date/Time: <u>04/14/13 3:00</u>	Received by: <u>Zac</u>	Print Name: <u>Zac Washburn</u> Date/Time: <u>4/15/13 9:12</u>
Relinquished by:		Print Name:	Date/Time:	Received by:	Print Name: Date/Time:
Relinquished by:		Print Name:	Date/Time:	Received by:	Print Name: Date/Time:



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: <u>ESH</u>		SDG/AR/COC/Work Order: <u>425532</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/15/17</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 2153</u> <u>5908 1782 2164</u> <u>5908 1782 2175</u> <u>5908 1782 2142</u> <u>5908 1782 2120</u> <u>5908 1782 2131</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM/InR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet ice <u>Ice Packs</u> Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>5°C</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No <input checked="" type="checkbox"/> N/A ___ Sample ID's and containers affected: <u>-133344 rec'd w/ headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" 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 checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials

AM

Date

6/16/17

Page

of

GL-CHL-SR-001 Rev 5

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

SHIP DATE: 14 JUN 17
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2916

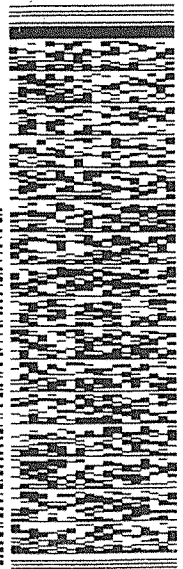
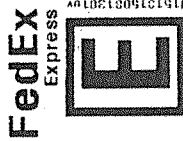
BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0WE991158W100

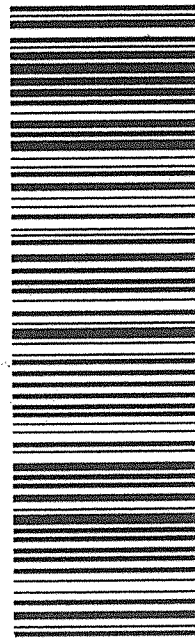


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PRIORITY OVERNIGHT

TRK# 5908 1782 2153

X7 RBWA

29407
SC-US CHS



RT0
FZ 0

2153
06.15

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

SHIP DATE: 14 JUN 17
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2916

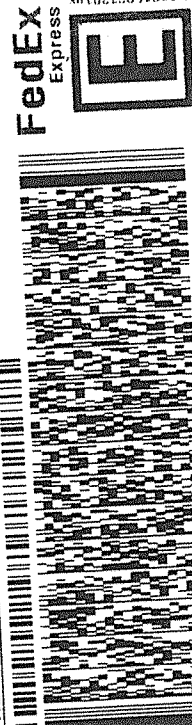
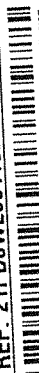
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LOS ALAMOS, NM 87545
UNITED STATES US

VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171
REF: 21PD0WE991158W100

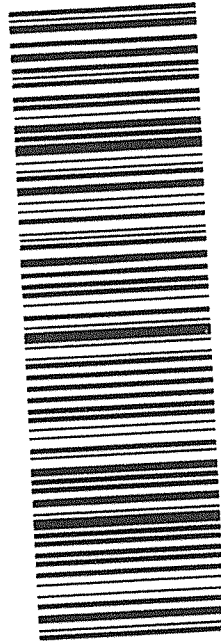


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1 of 2
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MASTER

X7 RBWA

29407
SC-US CHS



RT0
FZ 0

2131
06.15

SHIP DATE: 14 JUN 17
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2916

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

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

TO VALERIE DAVIS

GENERAL ENGINEERING LAB

2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PDOWE991158W100

FedEx
Express



THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

2 of 2

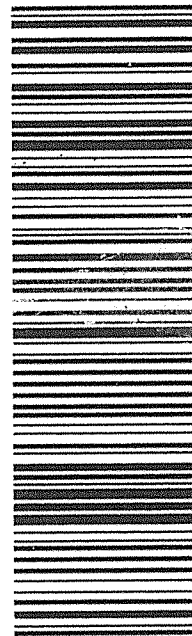
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SC-US CHS



Part # 156140V-434 RIT2 06/15 3

2142
06.15

RT 0

FZ 0

SHIP DATE: 14 JUN 17
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2916

ORIGIN ID: SAFA (505) 665-9966

KEITH GREENE
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

TO VALERIE DAVIS

GENERAL ENGINEERING LAB

2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRAE20DF6X0A

FedEx
Express



THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

2 of 2

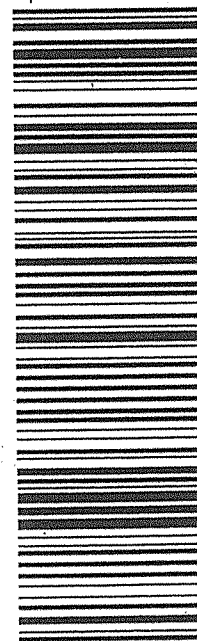
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X7 RBWA

29407
SC-US CHS



Part # 156140V-434 RIT2 06/15 3

2175
06.15

L RT 0

FZ 0

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CAD: 0014178/CAFE2916

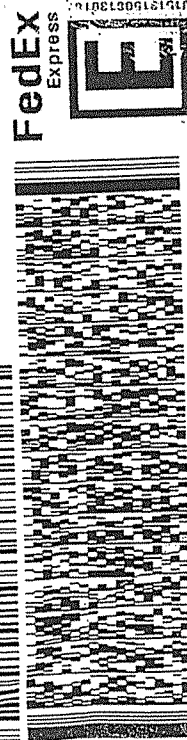
BILL SENDER

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

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171
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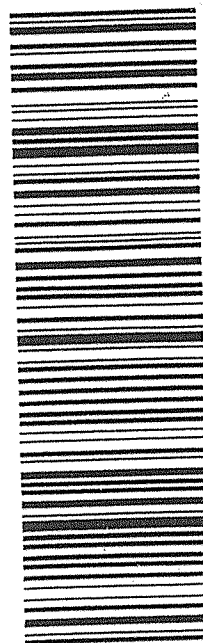


THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

1 of 2
TRK# 5908 1782 2164
MASTER

X7 RBWA

29407
SC-US
CHS



RT0
2164
06.15
FZ 0

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

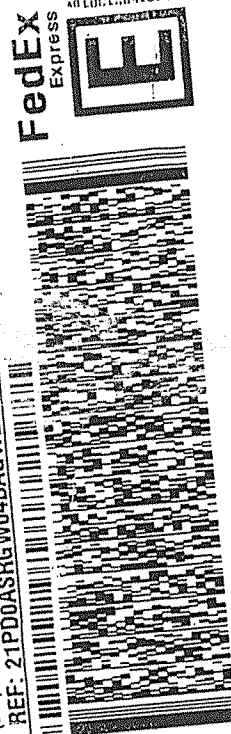
BILL SENDER

SHIP DATE: 14JUN17
ACTWGT: 51.0 LB MAN
CAD: 0014178/CAFE2916

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 656-8171
REF: 21PD0ASRGW04BAGWEO

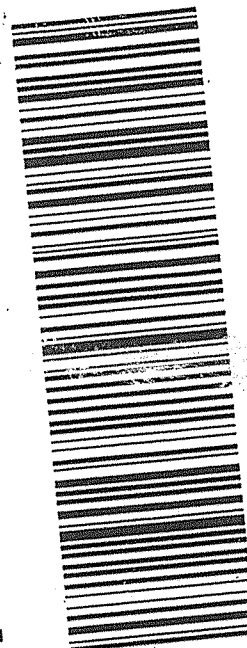


THU - 15 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 5908 1782 2120
[0201]

29407
SC-US
CHS

X7 RBWA



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 #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch
Number: 1676097

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
425532001	CAWA-17-133299
425532005	CAWA-17-133337
425532007	CAWA-17-133341
425532008	CAWA-17-133344
1203816298	Method Blank (MB)
1203816299	Laboratory Control Sample (LCS)
1203816300	Laboratory Control Sample (LCS)
1203816301	425329001(CAWA-17-133302) Post Spike (PS)
1203816302	425329001(CAWA-17-133302) Post Spike (PS)
1203816303	425329001(CAWA-17-133302) Post Spike Duplicate (PSD)
1203816304	425329001(CAWA-17-133302) Post Spike Duplicate (PSD)
1203817176	Method Blank (MB)
1203817177	Laboratory Control Sample (LCS)
1203817178	Laboratory Control Sample (LCS)
1203818955	Method Blank (MB)
1203818956	Laboratory Control Sample (LCS)
1203818957	Laboratory Control Sample (LCS)

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

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

SOP Reference

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

Calibration Information

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

Initial Calibration

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

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blanks analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 425329001 (CAWA-17-133302) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement

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

Relative Percent Difference (RPD) Statement

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

Sample	Analyte	Value
1203816301PS and 1203816303PSD (CAWA-17-133302)	Chloromethane	33* (0%-20%)
	Vinyl chloride	34* (0%-20%)

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Sample Preservation and Integrity

Sample 425532008 (CAWA-17-133344) contained head-space greater than pea size. The Project Manager was notified and the results are reported.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Sample 425532005 (CAWA-17-133337) was re-analyzed due to unacceptable surrogate or internal standard recoveries in the initial analysis. The re-analyses confirmed/and or passed and were reported.

Miscellaneous Information**Manual Integrations**

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

TIC Comment

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

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

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

Electronic Package Comment

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

System Configuration

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

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

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

VOA4.I	Hewlett Packard 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10
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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: 2017-1748 GEL Work Order: 425532

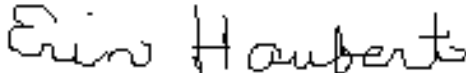
The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Erin Haubert

Date: 11 JUL 2017

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 17:24	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 17:24		
Data File: 062217V4\4N417.D	Column: DB-624	

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 17:24	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 17:24		
Data File: 062217V4\4N417.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 17:24	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 17:24				
Data File:	062217V4\4N417.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.5	50.0	ug/L 93	(71%-134%)
Bromofluorobenzene	47.4	50.0	ug/L 95	(70%-131%)
Toluene-d8	47.7	50.0	ug/L 95	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.54	6.53	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA1.I	Dilution: 1
Run Date: 06/25/2017 20:12	Analyst: PXY1	Purge Vol: 5 mL
Prep Date: 06/25/2017 20:12		
Data File: 062517V1\IN713.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532005	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133337	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA1.I	Dilution:	1
Run Date:	06/25/2017 20:12	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	06/25/2017 20:12				
Data File:	062517V1\1N713.D	Column:	DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA1.I	Dilution: 1
Run Date: 06/25/2017 20:12	Analyst: PXY1	Purge Vol: 5 mL
Prep Date: 06/25/2017 20:12		
Data File: 062517V1\1N713.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.1	50.0	ug/L 104	(71%-134%)
Bromofluorobenzene	61.7	50.0	ug/L 123	(70%-131%)
Toluene-d8	50.3	50.0	ug/L 101	(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: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:22	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:22		
Data File: 062217V4\4N419.D	Column: DB-624	

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

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Sample Summary

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:22	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:22		
Data File: 062217V4\4N419.D	Column: DB-624	

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

**Volatile
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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:22	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:22		
Data File: 062217V4\4N419.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.3	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	48.2	50.0	ug/L 96	(70%-131%)
Toluene-d8	47.1	50.0	ug/L 94	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.521	13.6	ug/L	0	J

**Volatile
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Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:53	Matrix:	W
Lab Sample ID:	425532008	Date Received:	06/15/2017 09:05		
Client Sample:	VOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133344	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 18:52	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 18:52				
Data File:	062217V4\4N420.D	Column:	DB-624		

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

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Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:53	Matrix:	W
Lab Sample ID:	425532008	Date Received:	06/15/2017 09:05		
Client Sample:	VOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133344	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/22/2017 18:52	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/22/2017 18:52				
Data File:	062217V4\4N420.D	Column:	DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:53	Matrix: W
Lab Sample ID: 425532008	Date Received: 06/15/2017 09:05	
Client Sample: VOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133344	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/22/2017 18:52	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/22/2017 18:52		
Data File: 062217V4\4N420.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.5	50.0	ug/L 99	(71%-134%)
Bromofluorobenzene	47.9	50.0	ug/L 96	(70%-131%)
Toluene-d8	45.2	50.0	ug/L 90	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	12.132	13.1	ug/L	0	J
	unknown siloxane	14.509	26.1	ug/L	0	J
	unknown siloxane	16.466	5.42	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1748**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203816299	LCS for batch 1676097	89	96	88
1203816300	LCS for batch 1676097	93	95	98
1203816298	MB for batch 1676097	91	98	89
1203816301	CAWA-17-133302PS	99	97	93
1203816303	CAWA-17-133302PSD	99	98	95
1203816302	CAWA-17-133302PS	97	97	101
1203816304	CAWA-17-133302PSD	102	97	101
1203817177	LCS for batch 1676097	103	97	93
1203817178	LCS for batch 1676097	105	95	100
1203817176	MB for batch 1676097	105	97	98
425532001	CAWA-17-133299	93	95	95
425532007	CAWA-17-133341	101	94	96
425532008	CAWA-17-133344	99	90	96
1203818956	LCS for batch 1676097	99	97	107
1203818957	LCS for batch 1676097	97	97	110
1203818955	MB for batch 1676097	101	102	118
425532005	CAWA-17-133337	104	101	123

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: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	96.3	96	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1140	91	61-125
67-64-1	LCS Acetone	250	0.0	298	119	48-157
74-88-4	LCS Iodomethane	250	0.0	244	98	72-128
75-15-0	LCS Carbon disulfide	250	0.0	234	94	69-138
108-05-4	LCS Vinyl acetate	250	0.0	213	85	67-125
78-93-3	LCS 2-Butanone	250	0.0	260	104	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	223	89	66-124
591-78-6	LCS 2-Hexanone	250	0.0	264	106	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	30.0	60	40-160
74-87-3	LCS Chloromethane	50.0	0.0	41.8	84	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	41.8	84	65-137
74-83-9	LCS Bromomethane	50.0	0.0	42.2	84	63-137
75-00-3	LCS Chloroethane	50.0	0.0	44.5	89	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	42.4	85	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	48.7	97	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	47.1	94	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	44.2	88	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	46.1	92	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	48.6	97	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	47.8	96	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	49.9	100	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	46.4	93	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	51.4	103	76-125
67-66-3	LCS Chloroform	50.0	0.0	45.4	91	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	46.5	93	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	45.5	91	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	49.3	99	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	44.4	89	74-122
71-43-2	LCS Benzene	50.0	0.0	45.4	91	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	48.2	96	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	46.9	94	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	47.7	95	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	48.4	97	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	48.2	96	78-131
108-88-3	LCS Toluene	50.0	0.0	44.6	89	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.2	96	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	46.2	92	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	44.3	89	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	47.7	95	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	45.7	91	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	47.5	95	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	46.9	94	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	45.5	91	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	46.6	93	74-126
100-42-5	LCS Styrene	50.0	0.0	51.3	103	72-130
75-25-2	LCS Bromoform	50.0	0.0	52.8	106	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	45.2	90	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	42.4	85	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	43.7	87	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	46.3	93	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	43.7	87	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	46.6	93	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	45.9	92	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	42.5	85	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	47.7	95	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	45.9	92	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	46.5	93	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	47.9	96	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	45.1	90	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	44.3	89	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	44.5	89	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	42.6	85	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	48.0	96	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	47.1	94	70-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816299

Instrument: VOA4.I

Analysis Date: 06/21/2017 10:07

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	44.6	89	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	50.9	102	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.6	91	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5040	101	63-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203816300

Instrument: VOA4.I

Analysis Date: 06/21/2017 11:05

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	282	113	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	223	89	61-148
107-05-1	LCS Allyl chloride	250	0.0	237	95	59-125
107-13-1	LCS Acrylonitrile	250	0.0	222	89	65-122
107-12-0	LCS Propionitrile	250	0.0	216	86	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	229	91	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	228	91	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	218	87	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2140	86	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	36.7	73	66-147

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	99.5	100	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1350	108	56-131
67-64-1	PS Acetone	250	0.00 U	157	63	25-155
74-88-4	PS Iodomethane	250	0.00 U	264	105	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	248	99	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	211	85	48-133
78-93-3	PS 2-Butanone	250	0.00 U	204	81	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	263	105	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	228	91	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	31.9	64	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	40.3	81	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	44.3	89	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	43.4	87	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	44.7	89	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	43.2	86	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	50.5	101	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	50.4	101	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	48.7	97	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	53.8	108	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	52.6	105	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	52.3	105	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	53.5	107	69-127

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	50.3	101	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	56.3	113	71-130
67-66-3	PS Chloroform	50.0	0.00 U	50.7	101	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	50.8	102	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	49.1	98	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	52.6	105	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	52.6	105	69-130
71-43-2	PS Benzene	50.0	0.00 U	49.2	98	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	51.7	103	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	51.4	103	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	53.3	107	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	52.7	105	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	52.7	105	70-134
108-88-3	PS Toluene	50.0	0.00 U	47.1	94	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	53.7	107	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	51.1	102	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	49.5	99	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	48.7	97	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	48.7	97	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	52.6	105	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	49.4	99	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	48.1	96	61-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	49.4	99	62-131
100-42-5	PS Styrene	50.0	0.00 U	52.8	106	59-135
75-25-2	PS Bromoform	50.0	0.00 U	56.4	113	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	47.3	95	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	49.2	98	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	50.7	101	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	48.8	98	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	45.4	91	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	50.0	100	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	48.6	97	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	44.4	89	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	50.9	102	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	48.2	96	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	48.8	98	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	50.2	100	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	46.7	93	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	45.5	91	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	46.4	93	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	52.0	104	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	47.9	96	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	56.5	113	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	50.3	101	52-135

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816301

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:20

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	47.8	96	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	54.3	109	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	48.2	96	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	6270	125	60-140

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	97.6	98	59-132	2	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	1370	109	56-131	1	0-20
67-64-1	PSD Acetone	250	0.00 U	153	61	25-155	3	0-20
74-88-4	PSD Iodomethane	250	0.00 U	269	108	66-133	2	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	242	97	61-141	3	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	200	80	48-133	6	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	199	80	25-143	2	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	256	102	61-127	3	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	214	86	33-138	6	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	32.1	64	33-164	1	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	29.0	58	53-139	33 *	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	31.4	63	58-140	34 *	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	42.1	84	59-146	3	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	45.1	90	65-129	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	44.2	88	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	50.7	101	69-127	1	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	51.5	103	59-130	2	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	48.9	98	62-123	0	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	55.2	110	69-132	3	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	52.7	105	65-127	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	52.3	105	67-127	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	53.9	108	69-127	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	52.2	104	66-137	4	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	57.0	114	71-130	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	51.4	103	71-129	1	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	52.8	106	69-139	4	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	49.9	100	67-130	2	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	55.8	112	66-143	6	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	52.3	105	69-130	1	0-20
71-43-2	PSD Benzene	50.0	0.00 U	49.5	99	66-125	1	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	52.1	104	65-131	1	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	50.7	101	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	53.9	108	72-129	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	53.9	108	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	53.2	106	70-134	1	0-20
108-88-3	PSD Toluene	50.0	0.00 U	47.7	95	60-126	1	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	54.1	108	69-135	1	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	51.3	103	66-125	0	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	48.2	96	67-124	3	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	51.4	103	60-130	5	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	51.2	102	68-143	5	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	54.8	110	71-127	4	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	49.6	99	64-124	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	47.6	95	61-130	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.2	96	62-131	2	0-20
100-42-5	PSD Styrene	50.0	0.00 U	51.5	103	59-135	2	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	59.4	119	64-138	5	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	47.3	95	55-133	0	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	48.6	97	62-129	1	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	50.5	101	70-124	0	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	49.3	99	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	43.7	87	50-133	4	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	47.1	94	53-135	6	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	45.6	91	56-128	6	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	44.6	89	53-130	1	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	50.6	101	55-135	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	47.5	95	53-132	2	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	47.0	94	50-138	4	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	48.7	97	49-138	3	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	46.8	94	56-126	0	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	45.8	92	55-125	1	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	43.7	87	43-142	6	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	52.5	105	62-141	1	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	47.7	95	40-147	1	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	55.1	110	62-134	2	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	50.7	101	52-135	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816303

Instrument: VOA4.I

Analysis Date: 06/21/2017 19:49

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.5	97	50-133	1	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	55.2	110	71-133	2	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	48.3	97	60-125	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	6160	123	60-140	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike

Client ID: CAWA-17-133302PS

Matrix: W

Lab Sample ID 1203816302

Instrument: VOA4.I

Analysis Date: 06/21/2017 20:18

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	262	105	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	209	84	57-149
107-05-1	PS Allyl chloride	250	0.00 U	227	91	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	218	87	59-129
107-12-0	PS Propionitrile	250	0.00 U	215	86	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	222	89	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	225	90	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	216	86	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2120	85	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	37.0	74	63-146

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-133302PSD

Matrix: W

Lab Sample ID 1203816304

Instrument: VOA4.I

Analysis Date: 06/21/2017 20:47

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00	U	280	112	49-141	7	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00	U	231	92	57-149	10	0-20
107-05-1	PSD Allyl chloride	250	0.00	U	244	97	54-128	7	0-20
107-13-1	PSD Acrylonitrile	250	0.00	U	236	94	59-129	8	0-20
107-12-0	PSD Propionitrile	250	0.00	U	228	91	58-131	6	0-20
126-98-7	PSD Methacrylonitrile	250	0.00	U	241	96	59-134	8	0-20
80-62-6	PSD Methyl methacrylate	250	0.00	U	241	96	62-135	7	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00	U	231	92	60-136	7	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00	U	2250	90	60-143	6	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00	U	39.6	79	63-146	7	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	98.1	98	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1270	101	61-125
67-64-1	LCS Acetone	250	0.0	339	136	48-157
74-88-4	LCS Iodomethane	250	0.0	245	98	72-128
75-15-0	LCS Carbon disulfide	250	0.0	240	96	69-138
108-05-4	LCS Vinyl acetate	250	0.0	246	98	67-125
78-93-3	LCS 2-Butanone	250	0.0	290	116	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	250	100	66-124
591-78-6	LCS 2-Hexanone	250	0.0	295	118	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	57.4	115	40-160
74-87-3	LCS Chloromethane	50.0	0.0	51.9	104	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	56.2	112	65-137
74-83-9	LCS Bromomethane	50.0	0.0	49.7	99	63-137
75-00-3	LCS Chloroethane	50.0	0.0	51.4	103	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	51.9	104	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.9	104	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	48.7	97	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	45.0	90	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	49.7	99	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	49.6	99	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	49.4	99	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	49.6	99	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	50.9	102	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	51.3	103	76-125
67-66-3	LCS Chloroform	50.0	0.0	47.8	96	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	49.7	99	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	47.6	95	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	53.0	106	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	50.1	100	74-122
71-43-2	LCS Benzene	50.0	0.0	46.2	92	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	48.7	97	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	48.0	96	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	50.8	102	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	51.4	103	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	51.0	102	78-131
108-88-3	LCS Toluene	50.0	0.0	44.9	90	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	50.6	101	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	47.0	94	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	46.9	94	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	47.1	94	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	46.2	92	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	49.4	99	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	46.7	93	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	46.2	92	73-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.3	97	74-126
100-42-5	LCS Styrene	50.0	0.0	52.0	104	72-130
75-25-2	LCS Bromoform	50.0	0.0	54.5	109	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	45.8	92	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	44.8	90	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	46.2	92	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.2	90	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	44.5	89	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	48.4	97	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.2	92	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	43.7	87	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	47.8	96	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	47.2	94	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	47.7	95	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	48.6	97	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	44.8	90	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	44.5	89	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	46.0	92	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	46.1	92	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	46.4	93	72-136
91-20-3	LCS Naphthalene	50.0	0.0	51.6	103	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	49.1	98	70-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817177

Instrument: VOA4.I

Analysis Date: 06/22/2017 10:37

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	45.8	92	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	50.9	102	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.2	90	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	6040	121	63-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203817178

Instrument: VOA4.I

Analysis Date: 06/22/2017 11:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	298	119	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	233	93	61-148
107-05-1	LCS Allyl chloride	250	0.0	237	95	59-125
107-13-1	LCS Acrylonitrile	250	0.0	240	96	65-122
107-12-0	LCS Propionitrile	250	0.0	238	95	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	243	97	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	241	96	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	231	93	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2460	99	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	38.7	77	66-147

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	96.9	97	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1320	105	61-125
67-64-1	LCS Acetone	250	0.0	313	125	48-157
74-88-4	LCS Iodomethane	250	0.0	220	88	72-128
75-15-0	LCS Carbon disulfide	250	0.0	223	89	69-138
108-05-4	LCS Vinyl acetate	250	0.0	261	104	67-125
78-93-3	LCS 2-Butanone	250	0.0	300	120	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	247	99	66-124
591-78-6	LCS 2-Hexanone	250	0.0	294	118	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	53.4	107	40-160
74-87-3	LCS Chloromethane	50.0	0.0	51.2	102	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	54.2	108	65-137
74-83-9	LCS Bromomethane	50.0	0.0	59.1	118	63-137
75-00-3	LCS Chloroethane	50.0	0.0	54.3	109	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	57.5	115	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.2	102	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	50.2	100	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	45.4	91	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	44.3	89	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	51.9	104	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	50.8	102	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	48.3	97	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	54.7	109	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	47.7	95	76-125
67-66-3	LCS Chloroform	50.0	0.0	50.0	100	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	51.3	103	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	49.4	99	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	54.7	109	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	52.4	105	74-122
71-43-2	LCS Benzene	50.0	0.0	46.8	94	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	49.1	98	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	49.8	100	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	48.5	97	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	52.3	105	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	50.2	100	78-131
108-88-3	LCS Toluene	50.0	0.0	46.5	93	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	52.8	106	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	48.4	97	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	48.3	97	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	48.1	96	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	52.7	105	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	48.7	97	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	47.8	96	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	47.5	95	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

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	48.4	97	74-126
100-42-5	LCS Styrene	50.0	0.0	48.2	96	72-130
75-25-2	LCS Bromoform	50.0	0.0	53.1	106	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.7	93	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	48.2	96	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	50.1	100	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	45.1	90	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	46.9	94	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	47.8	96	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.9	94	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	47.3	95	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	48.9	98	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	47.9	96	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	48.7	97	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	49.8	100	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	45.4	91	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	46.1	92	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	50.2	100	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	43.2	86	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	48.9	98	72-136
91-20-3	LCS Naphthalene	50.0	0.0	47.9	96	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	49.9	100	70-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818956

Instrument: VOA1.I

Analysis Date: 06/25/2017 15:24

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	48.3	97	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.1	104	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	45.8	92	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5340	107	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1676097

Matrix: WATER

Lab Sample ID 1203818957

Instrument: VOA1.I

Analysis Date: 06/25/2017 16:50

Dilution: 1

Analyst: PXY1

Purge Vol: 5 mL

Batch ID: 1676097

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	256	102	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	265	106	61-148
107-05-1	LCS Allyl chloride	250	0.0	247	99	59-125
107-13-1	LCS Acrylonitrile	250	0.0	260	104	65-122
107-12-0	LCS Propionitrile	250	0.0	264	105	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	266	106	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	250	100	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	233	93	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	3090	123	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	46.1	92	66-147

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA4.I	Data File:	062117V4\4N306A.D
Lab Sample ID:	1203816298	Prep Date:	06/21/2017 11:34	Analyzed:	06/21/17 11:34
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 1676097	1203816299	062117V4\4N303A.D	06/21/17	1007
02 LCS for batch 1676097	1203816300	062117V4\4N305A.D	06/21/17	1105
03 CAWA-17-133302PS	1203816301	062117V4\4N322.D	06/21/17	1920
04 CAWA-17-133302PSD	1203816303	062117V4\4N323.D	06/21/17	1949
05 CAWA-17-133302PS	1203816302	062117V4\4N324.D	06/21/17	2018
06 CAWA-17-133302PSD	1203816304	062117V4\4N325.D	06/21/17	2047

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA4.I	Data File:	062217V4\4N406A.D
Lab Sample ID:	1203817176	Prep Date:	06/22/2017 12:04	Analyzed:	06/22/17 12:04
Column:	DB-624				

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

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
08 LCS for batch 1676097	1203817177	062217V4\4N403A.D	06/22/17	1037
09 LCS for batch 1676097	1203817178	062217V4\4N405A.D	06/22/17	1135
10 CAWA-17-133299	425532001	062217V4\4N417.D	06/22/17	1724
11 CAWA-17-133341	425532007	062217V4\4N419.D	06/22/17	1822
12 CAWA-17-133344	425532008	062217V4\4N420.D	06/22/17	1852

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1676097	Instrument ID:	VOA1.I	Data File:	062517V1\1N709A.D
Lab Sample ID:	1203818955	Prep Date:	06/25/2017 18:17	Analyzed:	06/25/17 18:17
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
14 LCS for batch 1676097	1203818956	062517V1\1N703A.D	06/25/17	1524
15 LCS for batch 1676097	1203818957	062517V1\1N706A.D	06/25/17	1650
16 CAWA-17-133337	425532005	062517V1\1N713.D	06/25/17	2012

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203816298			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/21/2017 11:34	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/21/2017 11:34			
Data File: 062117V4\4N306A.D	Column: DB-624		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203816298			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/21/2017 11:34	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/21/2017 11:34			
Data File: 062117V4\4N306A.D	Column: DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2017-1748	Matrix: WATER
Lab Sample ID: 1203816298	
Client Sample: QC for batch 1676097	Client: ARSL004
Client ID: MB for batch 1676097	Method: SW-846:8260B
Batch ID: 1676097	Inst: VOA4.I
Run Date: 06/21/2017 11:34	Analyst: VXY1
Prep Date: 06/21/2017 11:34	Purge Vol: 5 mL
Data File: 062117V4\4N306A.D	Column: DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	45.3	50.0	ug/L 91	(71%-134%)
Bromofluorobenzene	44.7	50.0	ug/L 89	(70%-131%)
Toluene-d8	48.9	50.0	ug/L 98	(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: 2017-1748

Lab Sample ID: 1203816299

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 10:07

Prep Date: 06/21/2017 10:07

Data File: 062117V4\4N303A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.5	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		42.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		47.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		47.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		45.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		47.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		43.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		42.6	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		47.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		44.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		46.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.6	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		44.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		46.4	ug/L	0.300	1.00
78-93-3	2-Butanone		260	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		45.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		264	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		42.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		47.9	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		223	ug/L	1.50	5.00
67-64-1	Acetone		298	ug/L	1.50	10.0
75-05-8	Acetonitrile		1140	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		45.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		46.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.4	ug/L	0.300	1.00
75-25-2	Bromoform		52.8	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203816299

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 10:07

Prep Date: 06/21/2017 10:07

Data File: 062117V4\4N303A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		234	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		49.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.9	ug/L	0.300	1.00
75-00-3	Chloroethane		44.5	ug/L	0.300	1.00
67-66-3	Chloroform		45.4	ug/L	0.300	1.00
74-87-3	Chloromethane		41.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		30.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		48.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		45.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		43.5	ug/L	0.300	1.00
74-88-4	Iodomethane		244	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.2	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		44.2	ug/L	1.00	10.0
91-20-3	Naphthalene		48.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		47.7	ug/L	0.300	1.00
108-88-3	Toluene		44.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		42.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		213	ug/L	1.50	5.00
75-01-4	Vinyl chloride		41.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		48.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.3	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5040	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		44.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		43.7	ug/L	0.300	1.00
95-47-6	o-Xylene		46.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203816299		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/21/2017 10:07	Analyst:	VXY1
Prep Date:	06/21/2017 10:07		
Data File:	062117V4\4N303A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		46.1	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.7	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		48.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.7	50.0	ug/L 89	(71%-134%)
Bromofluorobenzene	44.2	50.0	ug/L 88	(70%-131%)
Toluene-d8	48.2	50.0	ug/L 96	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203816300

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/21/2017 11:05

Prep Date: 06/21/2017 11:05

Data File: 062117V4\4N305A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		36.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		282	ug/L	1.50	5.00
107-13-1	Acrylonitrile		222	ug/L	1.50	5.00
107-05-1	Allyl chloride		237	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203816300			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/21/2017 11:05	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/21/2017 11:05			
Data File: 062117V4\4N305A.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		218	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2140	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		229	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		228	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		216	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		223	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203816300		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/21/2017 11:05	Analyst:	VXY1
Prep Date:	06/21/2017 11:05		
Data File:	062117V4\4N305A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.4	50.0	ug/L	93	(71%-134%)
Bromofluorobenzene	48.9	50.0	ug/L	98	(70%-131%)
Toluene-d8	47.7	50.0	ug/L	95	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/08/2017 11:53	Matrix: W
Lab Sample ID: 1203816301	Date Received: 06/13/2017 09:10	
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: CAWA-17-133302PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/21/2017 19:20	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/21/2017 19:20		
Data File: 062117V4\4N322.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		54.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		50.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		49.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.4	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.3	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		47.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		52.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.0	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.7	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		49.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.3	ug/L	0.300	1.00
78-93-3	2-Butanone		204	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		48.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		228	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		50.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		263	ug/L	1.50	5.00
67-64-1	Acetone		157	ug/L	1.50	10.0
75-05-8	Acetonitrile		1350	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		49.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		48.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		56.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		52.7	ug/L	0.300	1.00
75-25-2	Bromoform		56.4	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816301	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:20				
Data File:	062117V4\4N322.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		43.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		248	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		52.6	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.4	ug/L	0.300	1.00
75-00-3	Chloroethane		44.7	ug/L	0.300	1.00
67-66-3	Chloroform		50.7	ug/L	0.300	1.00
74-87-3	Chloromethane		40.3	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		48.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		31.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.1	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		47.9	ug/L	0.300	1.00
74-88-4	Iodomethane		264	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		47.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.7	ug/L	1.00	10.0
91-20-3	Naphthalene		56.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.7	ug/L	0.300	1.00
108-88-3	Toluene		47.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		51.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		43.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		211	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.5	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		52.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		99.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6270	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		46.4	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		45.4	ug/L	0.300	1.00
95-47-6	o-Xylene		49.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		48.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816301	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:20	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:20				
Data File:	062117V4\4N322.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		53.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		53.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.3	50.0	99	(71%-134%)
Bromofluorobenzene	46.7	50.0	93	(70%-131%)
Toluene-d8	48.4	50.0	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748	Date Collected: 06/08/2017 11:53	Matrix: W
Lab Sample ID: 1203816302	Date Received: 06/13/2017 09:10	
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: CAWA-17-133302PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/21/2017 20:18	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/21/2017 20:18		
Data File: 062117V4\4N324.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		37.0	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		262	ug/L	1.50	5.00
107-13-1	Acrylonitrile		218	ug/L	1.50	5.00
107-05-1	Allyl chloride		227	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816302	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:18	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:18				
Data File:	062117V4\4N324.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		216	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2120	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		222	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		225	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		215	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		209	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748	Date Collected: 06/08/2017 11:53	Matrix: W
Lab Sample ID: 1203816302	Date Received: 06/13/2017 09:10	
Client Sample: QC for batch 1676097	Client: ARSL004	Project: QC
Client ID: CAWA-17-133302PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution: 1
Run Date: 06/21/2017 20:18	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 06/21/2017 20:18		
Data File: 062117V4\4N324.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.7	50.0	97	(71%-134%)
Bromofluorobenzene	50.4	50.0	101	(70%-131%)
Toluene-d8	48.5	50.0	97	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		52.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		48.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		51.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		48.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.8	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		50.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		48.2	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		52.2	ug/L	0.300	1.00
78-93-3	2-Butanone		199	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		45.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		214	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.6	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		256	ug/L	1.50	5.00
67-64-1	Acetone		153	ug/L	1.50	10.0
75-05-8	Acetonitrile		1370	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		49.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		57.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		53.9	ug/L	0.300	1.00
75-25-2	Bromoform		59.4	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		42.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		242	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		55.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.6	ug/L	0.300	1.00
75-00-3	Chloroethane		45.1	ug/L	0.300	1.00
67-66-3	Chloroform		51.4	ug/L	0.300	1.00
74-87-3	Chloromethane		29.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		32.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.7	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		47.7	ug/L	0.300	1.00
74-88-4	Iodomethane		269	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		47.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.9	ug/L	1.00	10.0
91-20-3	Naphthalene		55.1	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.4	ug/L	0.300	1.00
108-88-3	Toluene		47.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		44.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		200	ug/L	1.50	5.00
75-01-4	Vinyl chloride		31.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		53.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		97.6	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6160	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		43.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		43.7	ug/L	0.300	1.00
95-47-6	o-Xylene		48.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.0	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816303	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 19:49	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 19:49				
Data File:	062117V4\4N323.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		55.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.6	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		54.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.5	50.0	99	(71%-134%)
Bromofluorobenzene	47.6	50.0	95	(70%-131%)
Toluene-d8	48.9	50.0	98	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		39.6	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		280	ug/L	1.50	5.00
107-13-1	Acrylonitrile		236	ug/L	1.50	5.00
107-05-1	Allyl chloride		244	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		231	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2250	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		241	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		228	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		231	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Date Collected:	06/08/2017 11:53	Matrix:	W
Lab Sample ID:	1203816304	Date Received:	06/13/2017 09:10		
Client Sample:	QC for batch 1676097	Client:	ARSL004	Project:	QC
Client ID:	CAWA-17-133302PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1676097	Inst:	VOA4.I	Dilution:	1
Run Date:	06/21/2017 20:47	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	06/21/2017 20:47				
Data File:	062117V4\4N325.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.8	50.0	ug/L 102	(71%-134%)
Bromofluorobenzene	50.6	50.0	ug/L 101	(70%-131%)
Toluene-d8	48.7	50.0	ug/L 97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203817176

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 12:04

Prep Date: 06/22/2017 12:04

Data File: 062217V4\4N406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203817176			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: MB for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/22/2017 12:04	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/22/2017 12:04			
Data File: 062217V4\4N406A.D	Column: DB-624		

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

Volatile
Certificate of Analysis
Sample Summary

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SDG Number: 2017-1748

Lab Sample ID: 1203817176

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 12:04

Prep Date: 06/22/2017 12:04

Data File: 062217V4\4N406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.4	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	48.8	50.0	ug/L 98	(70%-131%)
Toluene-d8	48.3	50.0	ug/L 97	(74%-124%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203817177

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 10:37

Prep Date: 06/22/2017 10:37

Data File: 062217V4\4N403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		49.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		44.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		47.0	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		49.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		48.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		47.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		46.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		45.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		46.1	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.4	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		50.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		48.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		46.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		44.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.9	ug/L	0.300	1.00
78-93-3	2-Butanone		290	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.2	ug/L	0.300	1.00
591-78-6	2-Hexanone		295	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		43.7	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		250	ug/L	1.50	5.00
67-64-1	Acetone		339	ug/L	1.50	10.0
75-05-8	Acetonitrile		1270	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.4	ug/L	0.300	1.00
75-25-2	Bromoform		54.5	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203817177

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/22/2017 10:37

Prep Date: 06/22/2017 10:37

Data File: 062217V4\4N403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		49.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		240	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		53.0	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.7	ug/L	0.300	1.00
75-00-3	Chloroethane		51.4	ug/L	0.300	1.00
67-66-3	Chloroform		47.8	ug/L	0.300	1.00
74-87-3	Chloromethane		51.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		46.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		57.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		46.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		46.4	ug/L	0.300	1.00
74-88-4	Iodomethane		245	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.8	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.0	ug/L	1.00	10.0
91-20-3	Naphthalene		51.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		47.1	ug/L	0.300	1.00
108-88-3	Toluene		44.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		51.9	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		246	ug/L	1.50	5.00
75-01-4	Vinyl chloride		56.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		51.0	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		98.1	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6040	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		46.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.5	ug/L	0.300	1.00
95-47-6	o-Xylene		48.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203817177		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/22/2017 10:37	Analyst:	VXY1
Prep Date:	06/22/2017 10:37		
Data File:	062217V4\4N403A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		49.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		50.6	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		51.3	50.0	ug/L	103	(71%-134%)
Bromofluorobenzene		46.5	50.0	ug/L	93	(70%-131%)
Toluene-d8		48.6	50.0	ug/L	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203817178			
Client Sample: QC for batch 1676097	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1676097	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1676097	Inst: VOA4.I	Dilution:	1
Run Date: 06/22/2017 11:35	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 06/22/2017 11:35			
Data File: 062217V4\4N405A.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		38.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		298	ug/L	1.50	5.00
107-13-1	Acrylonitrile		240	ug/L	1.50	5.00
107-05-1	Allyl chloride		237	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203817178

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: LCS for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA4.I

Dilution: 1

Run Date: 06/22/2017 11:35

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 06/22/2017 11:35

Data File: 062217V4\4N405A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		231	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2460	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		243	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		238	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		233	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203817178		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA4.I
Run Date:	06/22/2017 11:35	Analyst:	VXY1
Prep Date:	06/22/2017 11:35		
Data File:	062217V4\4N405A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.5	50.0	ug/L	105	(71%-134%)
Bromofluorobenzene	49.9	50.0	ug/L	100	(70%-131%)
Toluene-d8	47.5	50.0	ug/L	95	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 18:17

Prep Date: 06/25/2017 18:17

Data File: 062517V1\IN709A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: MB for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA1.I

Dilution: 1

Run Date: 06/25/2017 18:17

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 06/25/2017 18:17

Data File: 062517V1\IN709A.D

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

Page 3 of 3

SDG Number: 2017-1748

Lab Sample ID: 1203818955

Client Sample: QC for batch 1676097

Client ID: MB for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 18:17

Prep Date: 06/25/2017 18:17

Data File: 062517V1\1N709A.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.7	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	59.2	50.0	ug/L 118	(70%-131%)
Toluene-d8	51.0	50.0	ug/L 102	(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: 2017-1748

Lab Sample ID: 1203818956

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 15:24

Prep Date: 06/25/2017 15:24

Data File: 062517V1\IN703A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		51.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		48.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		48.4	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		50.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		48.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		47.9	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		43.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		48.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		49.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		48.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		46.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		54.7	ug/L	0.300	1.00
78-93-3	2-Butanone		300	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		294	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		47.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.8	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		247	ug/L	1.50	5.00
67-64-1	Acetone		313	ug/L	1.50	10.0
75-05-8	Acetonitrile		1320	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		52.3	ug/L	0.300	1.00
75-25-2	Bromoform		53.1	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Lab Sample ID: 1203818956

Client Sample: QC for batch 1676097

Client ID: LCS for batch 1676097

Batch ID: 1676097

Run Date: 06/25/2017 15:24

Prep Date: 06/25/2017 15:24

Data File: 062517V1\IN703A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: PXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		59.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		223	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		54.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		47.8	ug/L	0.300	1.00
75-00-3	Chloroethane		54.3	ug/L	0.300	1.00
67-66-3	Chloroform		50.0	ug/L	0.300	1.00
74-87-3	Chloromethane		51.2	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		48.5	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		53.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.2	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.9	ug/L	0.300	1.00
74-88-4	Iodomethane		220	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.7	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.4	ug/L	1.00	10.0
91-20-3	Naphthalene		47.9	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		48.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.1	ug/L	0.300	1.00
108-88-3	Toluene		46.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		57.5	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		261	ug/L	1.50	5.00
75-01-4	Vinyl chloride		54.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		48.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		50.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.9	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5340	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.2	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		46.9	ug/L	0.300	1.00
95-47-6	o-Xylene		48.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		48.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203818956		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA1.I
Run Date:	06/25/2017 15:24	Analyst:	PXY1
Prep Date:	06/25/2017 15:24		
Data File:	062517V1\1N703A.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		44.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		48.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		51.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		52.8	ug/L	0.300	1.00
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4		49.7	50.0	ug/L	99	(71%-134%)
Bromofluorobenzene		53.4	50.0	ug/L	107	(70%-131%)
Toluene-d8		48.5	50.0	ug/L	97	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203818957

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: LCS for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA1.I

Dilution: 1

Run Date: 06/25/2017 16:50

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 06/25/2017 16:50

Data File: 062517V1\IN706A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		46.1	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		256	ug/L	1.50	5.00
107-13-1	Acrylonitrile		260	ug/L	1.50	5.00
107-05-1	Allyl chloride		247	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1748

Matrix: WATER

Lab Sample ID: 1203818957

Client Sample: QC for batch 1676097

Client: ARSL004

Project: QC

Client ID: LCS for batch 1676097

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1676097

Inst: VOA1.I

Dilution: 1

Run Date: 06/25/2017 16:50

Analyst: PXY1

Purge Vol: 5 mL

Prep Date: 06/25/2017 16:50

Data File: 062517V1\IN706A.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		233	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		3090	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		266	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		250	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		264	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		265	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203818957		
Client Sample:	QC for batch 1676097	Client:	ARSL004
Client ID:	LCS for batch 1676097	Method:	SW-846:8260B
Batch ID:	1676097	Inst:	VOA1.I
Run Date:	06/25/2017 16:50	Analyst:	PXY1
Prep Date:	06/25/2017 16:50		
Data File:	062517V1\1N706A.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.7	50.0	97	(71%-134%)
Bromofluorobenzene	55.0	50.0	110	(70%-131%)
Toluene-d8	48.5	50.0	97	(74%-124%)

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

Procedure:	Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1674421
Prep Batch Number:	1674418

Sample Analysis

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

Sample ID	Client ID
425532001	CAWA-17-133299
425532005	CAWA-17-133337
425532007	CAWA-17-133341
1203812331	Method Blank (MB)
1203812332	Laboratory Control Sample (LCS)
1203812333	425532001(CAWA-17-133299) Matrix Spike (MS)
1203812334	425532001(CAWA-17-133299) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 39.

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

Calibration Information

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

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

Initial Calibration

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

CCV Requirements

All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D for samples 425532001 (CAWA-17-133299), 425532005 (CAWA-17-133337) and 425532007 (CAWA-17-133341) and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit.

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 425532001 (CAWA-17-133299) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203812333MS and 1203812334MSD (CAWA-17-133299)	Benzidine	53* (0%-30%)

Internal Standard (ISTD) Acceptance

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

Technical Information:

Holding Time Specifications

All samples in this SDG in this batch met the specified holding time.

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

Miscellaneous Information:

Manual Integrations

Sample 1203812332 (LCS) required manual integration in order to properly identify one or more peaks and/or to correctly position the baseline as set in the calibration standard injections.

TIC Comment

Tentatively identified compounds (TIC) were requested for samples 425532001 (CAWA-17-133299), 425532005 (CAWA-17-133337) and 425532007 (CAWA-17-133341) in this SDG in this batch.

Additional Comments

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

Electronic Package Comment

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
MSDA.I	Agilent 7890B/5977A GC/MSD with 7693A Autoinjector	Agilent7890B/5977	DB-5MS	25m x 0.2mm x 0.33um (5% Polysilarylene-95% Polydimethylsiloxane)

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: 2017-1748 GEL Work Order: 425532

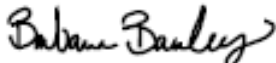
The Qualifiers in this report are defined as follows:

- * 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: Barbara Bailey

Date: 11 JUL 2017

Title: Data Validator

Sample Data Summary

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 16:55	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 062017.s\Af2014.D	Column: DB-5.625	

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

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

SDG Number:	2017-1748	Date Collected:	06/13/2017 10:35	Matrix:	W
Lab Sample ID:	425532001	Date Received:	06/15/2017 09:05		
Client Sample:	VOA/SVOA	Client:	ARSL004	Project:	ESHL00114
Client ID:	CAWA-17-133299	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1674421	Inst:	MSDA.I	Dilution:	1
Run Date:	06/20/2017 16:55	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	06/20/2017 05:15	Aliquot:	1000 mL	Final Volume:	1 mL
Data File:	062017.s\Af2014.D	Column:	DB-5.625		

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

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

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532001	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133299	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 16:55	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: 062017.s\Af2014.D	Column: DB-5.625	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	81.9	100	ug/L	82 (32%-124%)
2-Fluorobiphenyl	35.3	50.0	ug/L	71 (32%-112%)
2-Fluorophenol	30.9	100	ug/L	31 (15%-88%)
Nitrobenzene-d5	31.6	50.0	ug/L	63 (36%-115%)
Phenol-d5	19.3	100	ug/L	19 (15%-91%)
p-Terphenyl-d14	41.6	50.0	ug/L	83 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	15.951	4.1	ug/L	0	J
	unknown	16.198	9.05	ug/L	0	J
	unknown	16.251	6.61	ug/L	0	J
	unknown	16.322	6.62	ug/L	0	J
020548-62-3	Phthalic acid, bis(7-methyloctyl)	16.392	8.26	ug/L	91	NJ
	unknown	16.463	18.3	ug/L	0	J
	unknown	16.61	7.41	ug/L	0	J
	unknown	16.663	4.09	ug/L	0	J
	unknown	16.757	9.6	ug/L	0	J
	unknown	16.822	5.47	ug/L	0	J
1000308-94-0	Phthalic acid, heptyl undecyl este	22.398	12.5	ug/L	86	NJ

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

Page 1 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
90-12-0	1-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
91-57-6	2-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
83-32-9	Acenaphthene	U	1.04	ug/L	0.313	1.04
208-96-8	Acenaphthylene	U	1.04	ug/L	0.313	1.04
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
120-12-7	Anthracene	U	1.04	ug/L	0.313	1.04
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
56-55-3	Benzo(a)anthracene	U	1.04	ug/L	0.313	1.04
50-32-8	Benzo(a)pyrene	U	1.04	ug/L	0.313	1.04
205-99-2	Benzo(b)fluoranthene	U	1.04	ug/L	0.313	1.04
191-24-2	Benzo(ghi)perylene	U	1.04	ug/L	0.313	1.04

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.04	ug/L	0.313	1.04
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
218-01-9	Chrysene	U	1.04	ug/L	0.313	1.04
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
53-70-3	Dibenzo(a,h)anthracene	U	1.04	ug/L	0.313	1.04
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
206-44-0	Fluoranthene	U	1.04	ug/L	0.313	1.04
86-73-7	Fluorene	U	1.04	ug/L	0.313	1.04
118-74-1	Hexachlorobenzene	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.04	ug/L	0.313	1.04
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
91-20-3	Naphthalene	U	1.04	ug/L	0.313	1.04
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
87-86-5	Pentachlorophenol	U	10.4	ug/L	3.13	10.4
85-01-8	Phenanthrene	U	1.04	ug/L	0.313	1.04
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
129-00-0	Pyrene	U	1.04	ug/L	0.313	1.04
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4

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

Page 3 of 3

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532005	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133337	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:20	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2026.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	85.8	104	ug/L	82 (32%-124%)
2-Fluorobiphenyl	36.1	52.1	ug/L	69 (32%-112%)
2-Fluorophenol	31.5	104	ug/L	30 (15%-88%)
Nitrobenzene-d5	31.8	52.1	ug/L	61 (36%-115%)
Phenol-d5	20.0	104	ug/L	19 (15%-91%)
p-Terphenyl-d14	40.3	52.1	ug/L	77 (36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	18.151	4.6	ug/L	0	J
	unknown	19.604	6.34	ug/L	0	J
	unknown	21.286	8.55	ug/L	0	J
	unknown	22.398	5.14	ug/L	0	J
	unknown	22.527	10.9	ug/L	0	J

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

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
90-12-0	1-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
91-57-6	2-Methylnaphthalene	U	1.04	ug/L	0.313	1.04
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
83-32-9	Acenaphthene	U	1.04	ug/L	0.313	1.04
208-96-8	Acenaphthylene	U	1.04	ug/L	0.313	1.04
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
120-12-7	Anthracene	U	1.04	ug/L	0.313	1.04
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
56-55-3	Benzo(a)anthracene	U	1.04	ug/L	0.313	1.04
50-32-8	Benzo(a)pyrene	U	1.04	ug/L	0.313	1.04
205-99-2	Benzo(b)fluoranthene	U	1.04	ug/L	0.313	1.04
191-24-2	Benzo(ghi)perylene	U	1.04	ug/L	0.313	1.04

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.04	ug/L	0.313	1.04
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
218-01-9	Chrysene	U	1.04	ug/L	0.313	1.04
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
53-70-3	Dibenzo(a,h)anthracene	U	1.04	ug/L	0.313	1.04
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
206-44-0	Fluoranthene	U	1.04	ug/L	0.313	1.04
86-73-7	Fluorene	U	1.04	ug/L	0.313	1.04
118-74-1	Hexachlorobenzene	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.04	ug/L	0.313	1.04
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
91-20-3	Naphthalene	U	1.04	ug/L	0.313	1.04
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
87-86-5	Pentachlorophenol	U	10.4	ug/L	3.13	10.4
85-01-8	Phenanthrene	U	1.04	ug/L	0.313	1.04
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
129-00-0	Pyrene	U	1.04	ug/L	0.313	1.04
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 425532007	Date Received: 06/15/2017 09:05	
Client Sample: VOA/SVOA	Client: ARSL004	Project: ESHL00114
Client ID: CAWA-17-133341	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 22:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 960 mL	Final Volume: 1 mL
Data File: 062017.s\Af2027.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	81.9	104	ug/L 79	(32%-124%)
2-Fluorobiphenyl	36.7	52.1	ug/L 71	(32%-112%)
2-Fluorophenol	34.1	104	ug/L 33	(15%-88%)
Nitrobenzene-d5	33.6	52.1	ug/L 64	(36%-115%)
Phenol-d5	22.5	104	ug/L 22	(15%-91%)
p-Terphenyl-d14	40.8	52.1	ug/L 78	(36%-121%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	19.557	5.6	ug/L	0	J
	unknown	22.721	7.34	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

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SDG Number: 2017-1748

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203812331	MB for batch 1674418	36	23	59	63	79	76
1203812332	LCS for batch 1674418	46	29	75	78	91	80
425532001	CAWA-17-133299	31	19	63	71	82	83
1203812333	CAWA-17-133299MS	54	42	77	83	101	86
1203812334	CAWA-17-133299MSD	48	37	71	78	94	80
425532005	CAWA-17-133337	30	19	61	69	82	77
425532007	CAWA-17-133341	33	22	64	71	79	78

Surrogate

Acceptance Limits

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

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	23.0	46	30-88
110-86-1	LCS Pyridine	50.0	0.0	21.2	42	27-89
62-53-3	LCS Aniline	50.0	0.0	35.9	72	49-112
108-95-2	LCS Phenol	50.0	0.0	14.9	30	16-82
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	37.1	74	51-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	37.0	74	49-105
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	33.9	68	37-95
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	34.9	70	38-96
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	34.9	70	39-97
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	36.8	74	44-123
100-51-6	LCS Benzyl alcohol	50.0	0.0	32.4	65	44-102
95-48-7	LCS o-Cresol	50.0	0.0	32.9	66	41-101
65794-96-9	LCS m,p-Cresols	50.0	0.0	33.0	66	43-102
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	40.1	80	54-115
67-72-1	LCS Hexachloroethane	50.0	0.0	32.7	65	36-96
98-95-3	LCS Nitrobenzene	50.0	0.0	37.8	76	53-115
78-59-1	LCS Isophorone	50.0	0.0	37.2	74	56-117
88-75-5	LCS 2-Nitrophenol	50.0	0.0	38.8	78	51-113
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	36.1	72	51-104
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	37.6	75	55-114
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	40.8	82	53-109
65-85-0	LCS Benzoic acid	100	0.0	35.9	36	21-74

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	43.5	87	65-136
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	35.6	71	35-98
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	41.2	82	55-115
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	36.3	73	42-103
91-20-3	LCS Naphthalene	50.0	0.0	37.1	74	44-102
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	36.3	73	45-108
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	25.1	50	34-89
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	41.7	83	55-120
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	38.0	76	55-116
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	34.8	70	44-107
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	38.4	77	53-121
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	45.1	90	61-139
131-11-3	LCS Dimethylphthalate	50.0	0.0	40.5	81	60-122
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	39.4	79	59-122
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	43.8	88	57-124
208-96-8	LCS Acenaphthylene	50.0	0.0	38.2	76	50-113
83-32-9	LCS Acenaphthene	50.0	0.0	38.5	77	49-112
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	39.8	80	34-122
132-64-9	LCS Dibenzofuran	50.0	0.0	36.8	74	50-111
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	41.0	82	54-122
84-66-2	LCS Diethylphthalate	50.0	0.0	41.7	83	57-122
100-02-7	LCS 4-Nitrophenol	50.0	0.0	11.3	23	15-137

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS Fluorene	50.0	0.0	39.3	79	52-114
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	45.0	90	52-121
100-01-6	LCS 4-Nitroaniline <i>p-Nitroaniline</i>	50.0	0.0	36.1	72	44-137
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	38.5	77	45-124
122-39-4	LCS Diphenylamine	50.0	0.0	37.7	75	55-113
122-66-7	LCS Azobenzene <i>1,2-Diphenylhydrazine</i>	50.0	0.0	36.4	73	53-115
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	36.8	74	54-116
118-74-1	LCS Hexachlorobenzene	50.0	0.0	39.2	78	54-115
87-86-5	LCS Pentachlorophenol	50.0	0.0	40.5	81	41-116
85-01-8	LCS Phenanthrene	50.0	0.0	39.6	79	55-110
120-12-7	LCS Anthracene	50.0	0.0	39.7	79	56-112
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	39.1	78	57-123
206-44-0	LCS Fluoranthene	50.0	0.0	40.5	81	54-118
129-00-0	LCS Pyrene	50.0	0.0	39.1	78	49-121
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	36.8	74	52-125
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	37.3	75	52-125
56-55-3	LCS Benzo(a)anthracene	50.0	0.0	41.0	82	57-112
218-01-9	LCS Chrysene	50.0	0.0	44.3	89	58-117
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	35.1	70	50-129
205-99-2	LCS Benzo(b)fluoranthene	50.0	0.0	42.6	85	41-118
207-08-9	LCS Benzo(k)fluoranthene	50.0	0.0	45.0	90	42-121
50-32-8	LCS Benzo(a)pyrene	50.0	0.0	43.0	86	40-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1674418

Matrix: WATER

Lab Sample ID 1203812332

Instrument: MSDA.I

Analysis Date: 06/20/2017 16:28

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS Indeno(1,2,3-cd)pyrene	50.0	0.0	41.7	83	34-125
53-70-3	LCS Dibenzo(a,h)anthracene	50.0	0.0	44.0	88	38-129
191-24-2	LCS Benzo(ghi)perylene	50.0	0.0	42.9	86	33-131
123-91-1	LCS 1,4-Dioxane	50.0	0.0	23.3	47	38-78
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	38.5	77	54-113
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	34.0	68	44-102
1912-24-9	LCS Atrazine	50.0	0.0	42.3	85	60-131
92-87-5	LCS Benzidine	100	0.0	45.2	45	20-144
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	46.0	92	43-127
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	35.0	70	39-99

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	115	0.00 U	68.1	59	25-106
110-86-1	MS Pyridine	115	0.00 U	50.6	44	24-93
62-53-3	MS Aniline	115	0.00 U	81.4	71	37-113
108-95-2	MS Phenol	115	0.00 U	48.6	42	23-82
111-44-4	MS bis(2-Chloroethyl) ether	115	0.00 U	86.7	75	39-114
95-57-8	MS 2-Chlorophenol	115	0.00 U	84.4	73	37-108
541-73-1	MS 1,3-Dichlorobenzene	115	0.00 U	76.8	67	27-97
106-46-7	MS 1,4-Dichlorobenzene	115	0.00 U	79.0	69	28-97
95-50-1	MS 1,2-Dichlorobenzene	115	0.00 U	80.5	70	28-99
108-60-1	MS bis(2-Chloro-1-methylethyl)et	115	0.00 U	86.8	75	32-127
100-51-6	MS Benzyl alcohol	115	0.00 U	80.9	70	37-116
95-48-7	MS o-Cresol	115	0.00 U	77.5	67	34-109
65794-96-9	MS m,p-Cresols	115	0.00 U	80.8	70	36-120
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	115	0.00 U	95.4	83	42-118
67-72-1	MS Hexachloroethane	115	0.00 U	74.0	64	29-94
98-95-3	MS Nitrobenzene	115	0.00 U	88.3	77	38-123
78-59-1	MS Isophorone	115	0.00 U	89.8	78	43-120
88-75-5	MS 2-Nitrophenol	115	0.00 U	90.1	78	39-115
105-67-9	MS 2,4-Dimethylphenol	115	0.00 U	82.8	72	39-107
111-91-1	MS bis(2-Chloroethoxy)methane	115	0.00 U	89.1	78	42-118
120-83-2	MS 2,4-Dichlorophenol	115	0.00 U	94.8	82	40-111
65-85-0	MS Benzoic acid	230	0.00 U	119	52	17-95

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	115	0.00	U	104	91	44-138
87-68-3	MS	Hexachlorobutadiene	115	0.00	U	83.7	73	26-98
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	115	0.00	U	99.7	87	41-122
91-57-6	MS	2-Methylnaphthalene	115	0.00	U	90.5	79	29-109
91-20-3	MS	Naphthalene	115	0.00	U	90.0	78	31-108
90-12-0	MS	1-Methylnaphthalene	115	0.00	U	88.9	77	33-112
77-47-4	MS	Hexachlorocyclopentadiene	115	0.00	U	66.3	58	26-79
88-06-2	MS	2,4,6-Trichlorophenol	115	0.00	U	101	88	39-124
95-95-4	MS	2,4,5-Trichlorophenol	115	0.00	U	96.4	84	42-120
91-58-7	MS	2-Chloronaphthalene	115	0.00	U	87.7	76	29-113
88-74-4	MS	2-Nitroaniline o-Nitroaniline	115	0.00	U	94.2	82	41-121
99-09-2	MS	3-Nitroaniline m-Nitroaniline	115	0.00	U	119	104	42-144
131-11-3	MS	Dimethylphthalate	115	0.00	U	100	87	45-128
606-20-2	MS	2,6-Dinitrotoluene	115	0.00	U	98.8	86	46-124
121-14-2	MS	2,4-Dinitrotoluene	115	0.00	U	111	96	45-125
208-96-8	MS	Acenaphthylene	115	0.00	U	95.4	83	35-120
83-32-9	MS	Acenaphthene	115	0.00	U	98.4	86	35-117
51-28-5	MS	2,4-Dinitrophenol	115	0.00	U	99.1	86	27-122
132-64-9	MS	Dibenzofuran	115	0.00	U	94.1	82	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	115	0.00	U	103	89	40-128
84-66-2	MS	Diethylphthalate	115	0.00	U	104	91	43-127
100-02-7	MS	4-Nitrophenol	115	0.00	U	38.3	33	17-85

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	115	0.00	U	102	89	39-117
7005-72-3	MS	4-Chlorophenylphenylether	115	0.00	U	123	107	39-121
100-01-6	MS	4-Nitroaniline <i>p-Nitroaniline</i>	115	0.00	U	103	89	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	115	0.00	U	93.6	81	32-126
122-39-4	MS	Diphenylamine	115	0.00	U	91.4	80	37-118
122-66-7	MS	Azobenzene <i>1,2-Diphenylhydrazine</i>	115	0.00	U	88.8	77	38-120
101-55-3	MS	4-Bromophenylphenylether	115	0.00	U	93.8	82	39-121
118-74-1	MS	Hexachlorobenzene	115	0.00	U	95.3	83	40-118
87-86-5	MS	Pentachlorophenol	115	0.00	U	103	89	35-121
85-01-8	MS	Phenanthrene	115	0.00	U	98.4	86	40-115
120-12-7	MS	Anthracene	115	0.00	U	97.5	85	38-120
84-74-2	MS	Di-n-butylphthalate	115	0.00	U	93.5	81	41-128
206-44-0	MS	Fluoranthene	115	0.00	U	99.9	87	41-119
129-00-0	MS	Pyrene	115	0.00	U	98.6	86	35-128
85-68-7	MS	Butylbenzylphthalate	115	0.00	U	85.4	74	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	115	0.590	U	79.7	69	38-131
56-55-3	MS	Benzo(a)anthracene	115	0.00	U	100	87	39-120
218-01-9	MS	Chrysene	115	0.00	U	110	95	41-124
117-84-0	MS	Di-n-octylphthalate	115	1.03	U	74.3	64	37-134
205-99-2	MS	Benzo(b)fluoranthene	115	0.00	U	104	90	31-122
207-08-9	MS	Benzo(k)fluoranthene	115	0.00	U	109	94	33-123
50-32-8	MS	Benzo(a)pyrene	115	0.00	U	106	92	32-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike

Client ID: CAWA-17-133299MS

Matrix: W

Lab Sample ID 1203812333

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:22

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS Indeno(1,2,3-cd)pyrene	115	0.00 U	97.7	85	27-121
53-70-3	MS Dibenzo(a,h)anthracene	115	0.00 U	104	90	30-125
191-24-2	MS Benzo(ghi)perylene	115	0.00 U	100	87	24-126
123-91-1	MS 1,4-Dioxane	115	0.00 U	71.2	62	24-110
930-55-2	MS N-Nitrosopyrrolidine	115	0.00 U	96.0	84	47-119
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	115	0.00 U	87.1	76	32-101
1912-24-9	MS Atrazine	115	0.00 U	109	95	42-129
92-87-5	MS Benzidine	230	0.00 U	94.1	41	15-130
91-94-1	MS 3,3'-Dichlorobenzidine	115	0.00 U	116	101	34-124
120-82-1	MS 1,2,4-Trichlorobenzene	115	0.00 U	84.0	73	26-102

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits	
62-75-9	MSD N-Methyl-N-nitrosomethylam	115	0.00	U	60.7	53	25-106	11	0-30
110-86-1	MSD Pyridine	115	0.00	U	53.1	46	24-93	5	0-30
62-53-3	MSD Aniline	115	0.00	U	78.2	68	37-113	4	0-30
108-95-2	MSD Phenol	115	0.00	U	42.9	37	23-82	13	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	115	0.00	U	77.8	68	39-114	11	0-30
95-57-8	MSD 2-Chlorophenol	115	0.00	U	76.5	67	37-108	10	0-30
541-73-1	MSD 1,3-Dichlorobenzene	115	0.00	U	76.6	67	27-97	0	0-30
106-46-7	MSD 1,4-Dichlorobenzene	115	0.00	U	78.3	68	28-97	1	0-30
95-50-1	MSD 1,2-Dichlorobenzene	115	0.00	U	79.5	69	28-99	1	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	115	0.00	U	78.9	69	32-127	10	0-30
100-51-6	MSD Benzyl alcohol	115	0.00	U	72.7	63	37-116	11	0-30
95-48-7	MSD o-Cresol	115	0.00	U	69.2	60	34-109	11	0-30
65794-96-9	MSD m,p-Cresols	115	0.00	U	73.4	64	36-120	10	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	115	0.00	U	86.1	75	42-118	10	0-30
67-72-1	MSD Hexachloroethane	115	0.00	U	76.2	66	29-94	3	0-30
98-95-3	MSD Nitrobenzene	115	0.00	U	79.4	69	38-123	11	0-30
78-59-1	MSD Isophorone	115	0.00	U	80.3	70	43-120	11	0-30
88-75-5	MSD 2-Nitrophenol	115	0.00	U	82.3	72	39-115	9	0-30
105-67-9	MSD 2,4-Dimethylphenol	115	0.00	U	72.9	63	39-107	13	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	115	0.00	U	81.1	71	42-118	9	0-30
120-83-2	MSD 2,4-Dichlorophenol	115	0.00	U	84.8	74	40-111	11	0-30
65-85-0	MSD Benzoic acid	230	0.00	U	111	48	17-95	7	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	115	0.00 U	93.7	82	44-138	11	0-30
87-68-3	MSD Hexachlorobutadiene	115	0.00 U	83.3	72	26-98	0	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	115	0.00 U	88.8	77	41-122	12	0-30
91-57-6	MSD 2-Methylnaphthalene	115	0.00 U	84.2	73	29-109	7	0-30
91-20-3	MSD Naphthalene	115	0.00 U	84.8	74	31-108	6	0-30
90-12-0	MSD 1-Methylnaphthalene	115	0.00 U	83.6	73	33-112	6	0-30
77-47-4	MSD Hexachlorocyclopentadiene	115	0.00 U	64.3	56	26-79	3	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	115	0.00 U	91.5	80	39-124	10	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	115	0.00 U	85.0	74	42-120	13	0-30
91-58-7	MSD 2-Chloronaphthalene	115	0.00 U	81.2	71	29-113	8	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	115	0.00 U	86.1	75	41-121	9	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	115	0.00 U	113	99	42-144	5	0-30
131-11-3	MSD Dimethylphthalate	115	0.00 U	91.7	80	45-128	9	0-30
606-20-2	MSD 2,6-Dinitrotoluene	115	0.00 U	90.1	78	46-124	9	0-30
121-14-2	MSD 2,4-Dinitrotoluene	115	0.00 U	102	89	45-125	8	0-30
208-96-8	MSD Acenaphthylene	115	0.00 U	87.0	76	35-120	9	0-30
83-32-9	MSD Acenaphthene	115	0.00 U	90.3	79	35-117	9	0-30
51-28-5	MSD 2,4-Dinitrophenol	115	0.00 U	93.1	81	27-122	6	0-30
132-64-9	MSD Dibenzofuran	115	0.00 U	85.8	75	38-113	9	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	115	0.00 U	93.3	81	40-128	10	0-30
84-66-2	MSD Diethylphthalate	115	0.00 U	94.9	83	43-127	9	0-30
100-02-7	MSD 4-Nitrophenol	115	0.00 U	37.3	32	17-85	3	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD Fluorene	115	0.00 U	92.8	81	39-117	9	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	115	0.00 U	111	97	39-121	10	0-30
100-01-6	MSD 4-Nitroaniline <i>p</i> -Nitroaniline	115	0.00 U	98.7	86	30-133	4	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	115	0.00 U	86.2	75	32-126	8	0-30
122-39-4	MSD Diphenylamine	115	0.00 U	83.2	72	37-118	9	0-30
122-66-7	MSD Azobenzene <i>1,2-Diphenylhydrazine</i>	115	0.00 U	81.2	71	38-120	9	0-30
101-55-3	MSD 4-Bromophenylphenylether	115	0.00 U	85.8	75	39-121	9	0-30
118-74-1	MSD Hexachlorobenzene	115	0.00 U	87.2	76	40-118	9	0-30
87-86-5	MSD Pentachlorophenol	115	0.00 U	93.0	81	35-121	10	0-30
85-01-8	MSD Phenanthrene	115	0.00 U	90.2	78	40-115	9	0-30
120-12-7	MSD Anthracene	115	0.00 U	90.2	78	38-120	8	0-30
84-74-2	MSD Di-n-butylphthalate	115	0.00 U	84.7	74	41-128	10	0-30
206-44-0	MSD Fluoranthene	115	0.00 U	91.3	79	41-119	9	0-30
129-00-0	MSD Pyrene	115	0.00 U	90.2	78	35-128	9	0-30
85-68-7	MSD Butylbenzylphthalate	115	0.00 U	76.2	66	40-129	11	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	115	0.590 U	68.8	59	38-131	15	0-30
56-55-3	MSD Benzo(a)anthracene	115	0.00 U	92.4	80	39-120	8	0-30
218-01-9	MSD Chrysene	115	0.00 U	101	88	41-124	9	0-30
117-84-0	MSD Di-n-octylphthalate	115	1.03 U	64.1	55	37-134	15	0-30
205-99-2	MSD Benzo(b)fluoranthene	115	0.00 U	96.3	84	31-122	7	0-30
207-08-9	MSD Benzo(k)fluoranthene	115	0.00 U	100	87	33-123	8	0-30
50-32-8	MSD Benzo(a)pyrene	115	0.00 U	97.1	84	32-118	9	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1748

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-17-133299MSD

Matrix: W

Lab Sample ID 1203812334

Instrument: MSDA.I

Analysis Date: 06/20/2017 17:49

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1674418

Inj. Vol: 1 uL

Batch ID: 1674421

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD Indeno(1,2,3-cd)pyrene	115	0.00 U	87.3	76	27-121	11	0-30
53-70-3	MSD Dibenzo(a,h)anthracene	115	0.00 U	91.8	80	30-125	12	0-30
191-24-2	MSD Benzo(ghi)perylene	115	0.00 U	89.6	78	24-126	11	0-30
123-91-1	MSD 1,4-Dioxane	115	0.00 U	62.3	54	24-110	13	0-30
930-55-2	MSD N-Nitrosopyrrolidine	115	0.00 U	86.7	75	47-119	10	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	115	0.00 U	82.7	72	32-101	5	0-30
1912-24-9	MSD Atrazine	115	0.00 U	100	87	42-129	9	0-30
92-87-5	MSD Benzidine	230	0.00 U	162	71	15-130	53 *	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	115	0.00 U	113	98	34-124	3	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	115	0.00 U	80.4	70	26-102	4	0-30

Method Blank Summary

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SDG Number:	2017-1748	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1674418	Instrument ID:	MSDA.I	Data File:	062017.s\Af2012.D
Lab Sample ID:	1203812331	Prep Date:	06/20/2017 05:15	Analyzed:	06/20/17 15:56
Column:	DB-5.625				

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 1674418	1203812332	062017.s\Af2013.D	06/20/17	1628
02 CAWA-17-133299	425532001	062017.s\Af2014.D	06/20/17	1655
03 CAWA-17-133299MS	1203812333	062017.s\Af2015.D	06/20/17	1722
04 CAWA-17-133299MSD	1203812334	062017.s\Af2016.D	06/20/17	1749
05 CAWA-17-133337	425532005	062017.s\Af2026.D	06/20/17	2220
06 CAWA-17-133341	425532007	062017.s\Af2027.D	06/20/17	2246

Quality Control Data

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

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SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203812331			
Client Sample: QC for batch 1674418	Client: ARSL004	Project:	QC
Client ID: MB for batch 1674418	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution:	1
Run Date: 06/20/2017 15:56	Analyst: JMB3	Inj. Vol:	1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: 062017.s\Af2012.D	Column: DB-5.625		

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

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

SDG Number:	2017-1748	Matrix:	WATER
Lab Sample ID:	1203812331		
Client Sample:	QC for batch 1674418	Client:	ARSL004
Client ID:	MB for batch 1674418	Method:	SW846 3510C/8270D
Batch ID:	1674421	Inst:	MSDA.I
Run Date:	06/20/2017 15:56	Analyst:	JMB3
Prep Date:	06/20/2017 05:15	Aliquot:	1000 mL
Data File:	062017.s\Af2012.D	Column:	DB-5.625
		Project:	QC
		SOP Ref:	GL-OA-E-009
		Dilution:	1
		Inj. Vol:	1 uL
		Final Volume:	1 mL

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

**Semi-Volatile
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Sample Summary**

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SDG Number: 2017-1748

Lab Sample ID: 1203812331

Client Sample: QC for batch 1674418

Client ID: MB for batch 1674418

Batch ID: 1674421

Run Date: 06/20/2017 15:56

Prep Date: 06/20/2017 05:15

Data File: 062017.s\Af2012.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSDA.I
Analyst: JMB3
Aliquot: 1000 mL
Column: DB-5.625

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	78.6	100	ug/L	79	(32%-124%)
2-Fluorobiphenyl	31.7	50.0	ug/L	63	(32%-112%)
2-Fluorophenol	36.4	100	ug/L	36	(15%-88%)
Nitrobenzene-d5	29.4	50.0	ug/L	59	(36%-115%)
Phenol-d5	23.1	100	ug/L	23	(15%-91%)
p-Terphenyl-d14	38.1	50.0	ug/L	76	(36%-121%)

Tentatively Identified Compound Summary

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

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

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SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203812332			
Client Sample: QC for batch 1674418	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1674418	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution:	1
Run Date: 06/20/2017 16:28	Analyst: JMB3	Inj. Vol:	1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: 062017.s\Af2013.D	Column: DB-5.625		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		34.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		35.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		34.9	ug/L	3.00	10.0
122-66-7	Azobenzene		36.4	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		33.9	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		34.9	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		23.3	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		36.3	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		41.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		38.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		41.7	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		40.8	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		36.1	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		39.8	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		43.8	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		39.4	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		34.8	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		37.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		38.5	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		36.3	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		38.8	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		46.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		36.8	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		41.2	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		43.5	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		45.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		11.3	ug/L	3.00	10.0
83-32-9	Acenaphthene		38.5	ug/L	0.300	1.00
208-96-8	Acenaphthylene		38.2	ug/L	0.300	1.00
62-53-3	Aniline		35.9	ug/L	4.20	10.0
120-12-7	Anthracene		39.7	ug/L	0.300	1.00
1912-24-9	Atrazine		42.3	ug/L	3.00	10.0
92-87-5	Benzidine		45.2	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		41.0	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		43.0	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		42.6	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		42.9	ug/L	0.300	1.00

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

SDG Number: 2017-1748		Matrix:	WATER
Lab Sample ID: 1203812332			
Client Sample: QC for batch 1674418	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1674418	Method: SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution:	1
Run Date: 06/20/2017 16:28	Analyst: JMB3	Inj. Vol:	1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: 062017.s\Af2013.D	Column: DB-5.625		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		45.0	ug/L	0.300	1.00
65-85-0	Benzoic acid		35.9	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		32.4	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		36.8	ug/L	3.00	10.0
218-01-9	Chrysene		44.3	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		39.1	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		35.1	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		44.0	ug/L	0.300	1.00
132-64-9	Dibenzofuran		36.8	ug/L	3.00	10.0
84-66-2	Diethylphthalate		41.7	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		40.5	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine		37.7	ug/L	3.00	10.0
206-44-0	Fluoranthene		40.5	ug/L	0.300	1.00
86-73-7	Fluorene		39.3	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		39.2	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		35.6	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		25.1	ug/L	3.00	10.0
67-72-1	Hexachloroethane		32.7	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		41.7	ug/L	0.300	1.00
78-59-1	Isophorone		37.2	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		23.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		40.1	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		38.5	ug/L	3.00	10.0
91-20-3	Naphthalene		37.1	ug/L	0.300	1.00
98-95-3	Nitrobenzene		37.8	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		40.5	ug/L	3.00	10.0
85-01-8	Phenanthrene		39.6	ug/L	0.300	1.00
108-95-2	Phenol		14.9	ug/L	3.00	10.0
129-00-0	Pyrene		39.1	ug/L	0.300	1.00
110-86-1	Pyridine		21.2	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		36.8	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		37.6	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		37.1	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		37.3	ug/L	3.00	10.0

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

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SDG Number: 2017-1748	Matrix: WATER
Lab Sample ID: 1203812332	
Client Sample: QC for batch 1674418	Client: ARSL004
Client ID: LCS for batch 1674418	Method: SW846 3510C/8270D
Batch ID: 1674421	Inst: MSDA.I
Run Date: 06/20/2017 16:28	Analyst: JMB3
Prep Date: 06/20/2017 05:15	Aliquot: 1000 mL
Data File: 062017.s\Af2013.D	Column: DB-5.625
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		33.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		45.1	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		32.9	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		38.4	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		36.1	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	91.1	100	ug/L	91	(32%-124%)
2-Fluorobiphenyl	38.9	50.0	ug/L	78	(32%-112%)
2-Fluorophenol	45.7	100	ug/L	46	(15%-88%)
Nitrobenzene-d5	37.4	50.0	ug/L	75	(36%-115%)
Phenol-d5	29.1	100	ug/L	29	(15%-91%)
p-Terphenyl-d14	39.9	50.0	ug/L	80	(36%-121%)

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		87.1	ug/L	6.90	23.0
120-82-1	1,2,4-Trichlorobenzene		84.0	ug/L	6.90	23.0
95-50-1	1,2-Dichlorobenzene		80.5	ug/L	6.90	23.0
122-66-7	Azobenzene		88.8	ug/L	6.90	23.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		76.8	ug/L	6.90	23.0
106-46-7	1,4-Dichlorobenzene		79.0	ug/L	6.90	23.0
123-91-1	1,4-Dioxane		71.2	ug/L	6.90	23.0
90-12-0	1-Methylnaphthalene		88.9	ug/L	0.690	2.30
58-90-2	2,3,4,6-Tetrachlorophenol		103	ug/L	6.90	23.0
95-95-4	2,4,5-Trichlorophenol		96.4	ug/L	6.90	23.0
88-06-2	2,4,6-Trichlorophenol		101	ug/L	6.90	23.0
120-83-2	2,4-Dichlorophenol		94.8	ug/L	6.90	23.0
105-67-9	2,4-Dimethylphenol		82.8	ug/L	6.90	23.0
51-28-5	2,4-Dinitrophenol		99.1	ug/L	11.5	46.0
121-14-2	2,4-Dinitrotoluene		111	ug/L	6.90	23.0
606-20-2	2,6-Dinitrotoluene		98.8	ug/L	6.90	23.0
91-58-7	2-Chloronaphthalene		87.7	ug/L	0.943	2.30
95-57-8	2-Chlorophenol		84.4	ug/L	6.90	23.0
534-52-1	2-Methyl-4,6-dinitrophenol		93.6	ug/L	6.90	23.0
91-57-6	2-Methylnaphthalene		90.5	ug/L	0.690	2.30
88-75-5	2-Nitrophenol		90.1	ug/L	6.90	23.0
91-94-1	3,3'-Dichlorobenzidine		116	ug/L	6.90	23.0
101-55-3	4-Bromophenylphenylether		93.8	ug/L	6.90	23.0
59-50-7	Parachlorometa cresol		99.7	ug/L	6.90	23.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		104	ug/L	7.59	23.0
7005-72-3	4-Chlorophenylphenylether		123	ug/L	6.90	23.0
100-02-7	4-Nitrophenol		38.3	ug/L	6.90	23.0
83-32-9	Acenaphthene		98.4	ug/L	0.690	2.30
208-96-8	Acenaphthylene		95.4	ug/L	0.690	2.30
62-53-3	Aniline		81.4	ug/L	9.66	23.0
120-12-7	Anthracene		97.5	ug/L	0.690	2.30
1912-24-9	Atrazine		109	ug/L	6.90	23.0
92-87-5	Benzidine		94.1	ug/L	8.97	23.0
56-55-3	Benzo(a)anthracene		100	ug/L	0.690	2.30
50-32-8	Benzo(a)pyrene		106	ug/L	0.690	2.30
205-99-2	Benzo(b)fluoranthene		104	ug/L	0.690	2.30
191-24-2	Benzo(ghi)perylene		100	ug/L	0.690	2.30

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		109	ug/L	0.690	2.30
65-85-0	Benzoic acid		119	ug/L	13.8	46.0
100-51-6	Benzyl alcohol		80.9	ug/L	6.90	23.0
85-68-7	Butylbenzylphthalate		85.4	ug/L	6.90	23.0
218-01-9	Chrysene		110	ug/L	0.690	2.30
84-74-2	Di-n-butylphthalate		93.5	ug/L	6.90	23.0
117-84-0	Di-n-octylphthalate		74.3	ug/L	6.90	23.0
53-70-3	Dibenzo(a,h)anthracene		104	ug/L	0.690	2.30
132-64-9	Dibenzofuran		94.1	ug/L	6.90	23.0
84-66-2	Diethylphthalate		104	ug/L	6.90	23.0
131-11-3	Dimethylphthalate		100	ug/L	6.90	23.0
88-85-7	Dinoseb	U	23.0	ug/L	6.90	23.0
122-39-4	Diphenylamine		91.4	ug/L	6.90	23.0
206-44-0	Fluoranthene		99.9	ug/L	0.690	2.30
86-73-7	Fluorene		102	ug/L	0.690	2.30
118-74-1	Hexachlorobenzene		95.3	ug/L	6.90	23.0
87-68-3	Hexachlorobutadiene		83.7	ug/L	6.90	23.0
77-47-4	Hexachlorocyclopentadiene		66.3	ug/L	6.90	23.0
67-72-1	Hexachloroethane		74.0	ug/L	6.90	23.0
193-39-5	Indeno(1,2,3-cd)pyrene		97.7	ug/L	0.690	2.30
78-59-1	Isophorone		89.8	ug/L	8.05	23.0
62-75-9	N-Methyl-N-nitrosomethylamine		68.1	ug/L	6.90	23.0
924-16-3	N-Nitrosodi-n-butylamine	U	23.0	ug/L	6.90	23.0
55-18-5	N-Nitrosodiethylamine	U	23.0	ug/L	6.90	23.0
621-64-7	N-Nitrosodi--n-propylamine		95.4	ug/L	6.90	23.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		96.0	ug/L	6.90	23.0
91-20-3	Naphthalene		90.0	ug/L	0.690	2.30
98-95-3	Nitrobenzene		88.3	ug/L	6.90	23.0
608-93-5	Pentachlorobenzene	U	23.0	ug/L	6.90	23.0
87-86-5	Pentachlorophenol		103	ug/L	6.90	23.0
85-01-8	Phenanthrene		98.4	ug/L	0.690	2.30
108-95-2	Phenol		48.6	ug/L	6.90	23.0
129-00-0	Pyrene		98.6	ug/L	0.690	2.30
110-86-1	Pyridine		50.6	ug/L	6.90	23.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		86.8	ug/L	6.90	23.0
111-91-1	bis(2-Chloroethoxy)methane		89.1	ug/L	6.90	23.0
111-44-4	bis(2-Chloroethyl) ether		86.7	ug/L	6.90	23.0
117-81-7	bis(2-Ethylhexyl)phthalate		79.7	ug/L	6.90	23.0

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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812333	Date Received: 06/15/2017 09:05	
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Client ID: CAWA-17-133299MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:22	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2015.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		80.8	ug/L	8.51	23.0
99-09-2	3-Nitroaniline		119	ug/L	6.90	23.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		77.5	ug/L	6.90	23.0
88-74-4	2-Nitroaniline		94.2	ug/L	6.90	23.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		103	ug/L	6.90	23.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	233	230	ug/L	101	(32%-124%)
2-Fluorobiphenyl	95.8	115	ug/L	83	(32%-112%)
2-Fluorophenol	124	230	ug/L	54	(15%-88%)
Nitrobenzene-d5	88.7	115	ug/L	77	(36%-115%)
Phenol-d5	95.4	230	ug/L	42	(15%-91%)
p-Terphenyl-d14	98.8	115	ug/L	86	(36%-121%)

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

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Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		82.7	ug/L	6.90	23.0
120-82-1	1,2,4-Trichlorobenzene		80.4	ug/L	6.90	23.0
95-50-1	1,2-Dichlorobenzene		79.5	ug/L	6.90	23.0
122-66-7	Azobenzene		81.2	ug/L	6.90	23.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		76.6	ug/L	6.90	23.0
106-46-7	1,4-Dichlorobenzene		78.3	ug/L	6.90	23.0
123-91-1	1,4-Dioxane		62.3	ug/L	6.90	23.0
90-12-0	1-Methylnaphthalene		83.6	ug/L	0.690	2.30
58-90-2	2,3,4,6-Tetrachlorophenol		93.3	ug/L	6.90	23.0
95-95-4	2,4,5-Trichlorophenol		85.0	ug/L	6.90	23.0
88-06-2	2,4,6-Trichlorophenol		91.5	ug/L	6.90	23.0
120-83-2	2,4-Dichlorophenol		84.8	ug/L	6.90	23.0
105-67-9	2,4-Dimethylphenol		72.9	ug/L	6.90	23.0
51-28-5	2,4-Dinitrophenol		93.1	ug/L	11.5	46.0
121-14-2	2,4-Dinitrotoluene		102	ug/L	6.90	23.0
606-20-2	2,6-Dinitrotoluene		90.1	ug/L	6.90	23.0
91-58-7	2-Chloronaphthalene		81.2	ug/L	0.943	2.30
95-57-8	2-Chlorophenol		76.5	ug/L	6.90	23.0
534-52-1	2-Methyl-4,6-dinitrophenol		86.2	ug/L	6.90	23.0
91-57-6	2-Methylnaphthalene		84.2	ug/L	0.690	2.30
88-75-5	2-Nitrophenol		82.3	ug/L	6.90	23.0
91-94-1	3,3'-Dichlorobenzidine		113	ug/L	6.90	23.0
101-55-3	4-Bromophenylphenylether		85.8	ug/L	6.90	23.0
59-50-7	Parachlorometa cresol		88.8	ug/L	6.90	23.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		93.7	ug/L	7.59	23.0
7005-72-3	4-Chlorophenylphenylether		111	ug/L	6.90	23.0
100-02-7	4-Nitrophenol		37.3	ug/L	6.90	23.0
83-32-9	Acenaphthene		90.3	ug/L	0.690	2.30
208-96-8	Acenaphthylene		87.0	ug/L	0.690	2.30
62-53-3	Aniline		78.2	ug/L	9.66	23.0
120-12-7	Anthracene		90.2	ug/L	0.690	2.30
1912-24-9	Atrazine		100	ug/L	6.90	23.0
92-87-5	Benzidine		162	ug/L	8.97	23.0
56-55-3	Benzo(a)anthracene		92.4	ug/L	0.690	2.30
50-32-8	Benzo(a)pyrene		97.1	ug/L	0.690	2.30
205-99-2	Benzo(b)fluoranthene		96.3	ug/L	0.690	2.30
191-24-2	Benzo(ghi)perylene		89.6	ug/L	0.690	2.30

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

SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812334	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		100	ug/L	0.690	2.30
65-85-0	Benzoic acid		111	ug/L	13.8	46.0
100-51-6	Benzyl alcohol		72.7	ug/L	6.90	23.0
85-68-7	Butylbenzylphthalate		76.2	ug/L	6.90	23.0
218-01-9	Chrysene		101	ug/L	0.690	2.30
84-74-2	Di-n-butylphthalate		84.7	ug/L	6.90	23.0
117-84-0	Di-n-octylphthalate		64.1	ug/L	6.90	23.0
53-70-3	Dibenzo(a,h)anthracene		91.8	ug/L	0.690	2.30
132-64-9	Dibenzofuran		85.8	ug/L	6.90	23.0
84-66-2	Diethylphthalate		94.9	ug/L	6.90	23.0
131-11-3	Dimethylphthalate		91.7	ug/L	6.90	23.0
88-85-7	Dinoseb	U	23.0	ug/L	6.90	23.0
122-39-4	Diphenylamine		83.2	ug/L	6.90	23.0
206-44-0	Fluoranthene		91.3	ug/L	0.690	2.30
86-73-7	Fluorene		92.8	ug/L	0.690	2.30
118-74-1	Hexachlorobenzene		87.2	ug/L	6.90	23.0
87-68-3	Hexachlorobutadiene		83.3	ug/L	6.90	23.0
77-47-4	Hexachlorocyclopentadiene		64.3	ug/L	6.90	23.0
67-72-1	Hexachloroethane		76.2	ug/L	6.90	23.0
193-39-5	Indeno(1,2,3-cd)pyrene		87.3	ug/L	0.690	2.30
78-59-1	Isophorone		80.3	ug/L	8.05	23.0
62-75-9	N-Methyl-N-nitrosomethylamine		60.7	ug/L	6.90	23.0
924-16-3	N-Nitrosodi-n-butylamine	U	23.0	ug/L	6.90	23.0
55-18-5	N-Nitrosodiethylamine	U	23.0	ug/L	6.90	23.0
621-64-7	N-Nitrosodi--n-propylamine		86.1	ug/L	6.90	23.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		86.7	ug/L	6.90	23.0
91-20-3	Naphthalene		84.8	ug/L	0.690	2.30
98-95-3	Nitrobenzene		79.4	ug/L	6.90	23.0
608-93-5	Pentachlorobenzene	U	23.0	ug/L	6.90	23.0
87-86-5	Pentachlorophenol		93.0	ug/L	6.90	23.0
85-01-8	Phenanthrene		90.2	ug/L	0.690	2.30
108-95-2	Phenol		42.9	ug/L	6.90	23.0
129-00-0	Pyrene		90.2	ug/L	0.690	2.30
110-86-1	Pyridine		53.1	ug/L	6.90	23.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		78.9	ug/L	6.90	23.0
111-91-1	bis(2-Chloroethoxy)methane		81.1	ug/L	6.90	23.0
111-44-4	bis(2-Chloroethyl) ether		77.8	ug/L	6.90	23.0
117-81-7	bis(2-Ethylhexyl)phthalate		68.8	ug/L	6.90	23.0

**Semi-Volatile
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Sample Summary**

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SDG Number: 2017-1748	Date Collected: 06/13/2017 10:35	Matrix: W
Lab Sample ID: 1203812334	Date Received: 06/15/2017 09:05	
Client Sample: QC for batch 1674418	Client: ARSL004	Project: QC
Client ID: CAWA-17-133299MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1674421	Inst: MSDA.I	Dilution: 1
Run Date: 06/20/2017 17:49	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/20/2017 05:15	Aliquot: 435 mL	Final Volume: 1 mL
Data File: 062017.s\Af2016.D	Column: DB-5.625	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		73.4	ug/L	8.51	23.0
99-09-2	3-Nitroaniline		113	ug/L	6.90	23.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		69.2	ug/L	6.90	23.0
88-74-4	2-Nitroaniline		86.1	ug/L	6.90	23.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		98.7	ug/L	6.90	23.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	217	230	ug/L	94	(32%-124%)
2-Fluorobiphenyl	89.6	115	ug/L	78	(32%-112%)
2-Fluorophenol	111	230	ug/L	48	(15%-88%)
Nitrobenzene-d5	81.8	115	ug/L	71	(36%-115%)
Phenol-d5	86.0	230	ug/L	37	(15%-91%)
p-Terphenyl-d14	91.7	115	ug/L	80	(36%-121%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532**

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: 1675694

Prep Batch Number: 1675692

Sample Analysis

Sample ID	Client ID
425532003	425532003 (CAWA-17-133327)
425532004	425532004 (CAWA-17-133335)
1203815298	Interference Check Sample (ICS)
1203815291	Method Blank (MB)
1203815292	Laboratory Control Sample (LCS)
1203815293	425532003(CAWA-17-133327) Matrix Spike (MS)
1203815294	425532003(CAWA-17-133327) 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 425532003 (CAWA-17-133327) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard Area Acceptance

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

Retention Time

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

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integrations

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

Method Comments

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

Additional Comments

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

Perchlorate Isotope Ratio

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

System Configuration

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

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

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

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2017-1748 GEL Work Order: 425532

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 24 JUN 2017

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327Date Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 425532003Date Filtered: 20-JUN-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	0.265	ug/L		1	21-JUN-17 15:45	per0621020a
	Perchlorate Isotope Ratio			2.84			1	21-JUN-17 15:45	per0621020a
14797-73-0	Perchlorate-101	.05	.2	0.276	ug/L		1	21-JUN-17 15:45	per0621020a
	Perchlorate-O(18)			0.442	ug/L		1	21-JUN-17 15:45	per0621020a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133335Date Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 425532004Date Filtered: 20-JUN-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	0.253	ug/L		1	21-JUN-17 16:51	per0621026a
	Perchlorate Isotope Ratio			2.98			1	21-JUN-17 16:51	per0621026a
14797-73-0	Perchlorate-101	.05	.2	0.252	ug/L		1	21-JUN-17 16:51	per0621026a
	Perchlorate-O(18)			0.440	ug/L		1	21-JUN-17 16:51	per0621026a

^ 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): 2017-1748

Extract Batch Code: 1675692

Date Filtered: 20-JUN-17

Matrix: WATER

Sample ID: 1203815292

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	95		85 - 115
Perchlorate Isotope Ratio		2.86				-
Perchlorate-101	0.200	.195	ug/L	98		85 - 115
Perchlorate-O(18)		.476	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): 2017-1748

Extract Batch Code: 1675692

Date Extracted: 20-JUN-17

GEL MS/PS ID: 1203815293

Client ID: CAWA-17-133327

GEL MSD/PSD ID: 1203815294

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	0.265	ug/L	0.434	85	.487	111	11	30	75 - 125
Perchlorate Isotope Ratio	0	2.84		2.91		3.04		4		-
Perchlorate-101	0.200	0.276	ug/L	0.442	83	.474	99	7	30	75 - 125
Perchlorate-O(18)	0	0.442	ug/L	0.455		.436		4		-

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 20-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815291Date Filtered: 20-JUN-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	0.200	ug/L	U	1	21-JUN-17 15:12	per0621017a
	Perchlorate Isotope Ratio						1	21-JUN-17 15:12	per0621017a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	21-JUN-17 15:12	per0621017a
	Perchlorate-O(18)			0.499	ug/L		1	21-JUN-17 15:12	per0621017a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 20-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815292Date Filtered: 20-JUN-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	0.190	ug/L	J	1	21-JUN-17 15:23	per0621018a
	Perchlorate Isotope Ratio			2.86			1	21-JUN-17 15:23	per0621018a
14797-73-0	Perchlorate-101	.05	.2	0.195	ug/L	J	1	21-JUN-17 15:23	per0621018a
	Perchlorate-O(18)			0.476	ug/L		1	21-JUN-17 15:23	per0621018a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815298Date Filtered: 20-JUN-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	0.194	ug/L	J	1	21-JUN-17 15:34	per0621019a
	Perchlorate Isotope Ratio			2.8			1	21-JUN-17 15:34	per0621019a
14797-73-0	Perchlorate-101	.05	.2	0.205	ug/L		1	21-JUN-17 15:34	per0621019a
	Perchlorate-O(18)			0.463	ug/L		1	21-JUN-17 15:34	per0621019a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327MSDate Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815293Date Filtered: 20-JUN-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	0.434	ug/L		1	21-JUN-17 15:56	per0621021a
	Perchlorate Isotope Ratio			2.91			1	21-JUN-17 15:56	per0621021a
14797-73-0	Perchlorate-101	.05	.2	0.442	ug/L		1	21-JUN-17 15:56	per0621021a
	Perchlorate-O(18)			0.455	ug/L		1	21-JUN-17 15:56	per0621021a

^ 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: 1675692Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-17-133327MSDDate Received: 15-JUN-17GEL Job No (SDG): 2017-1748GEL Sample ID: 1203815294Date Filtered: 20-JUN-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	0.487	ug/L		1	21-JUN-17 16:07	per0621022a
	Perchlorate Isotope Ratio			3.04			1	21-JUN-17 16:07	per0621022a
14797-73-0	Perchlorate-101	.05	.2	0.474	ug/L		1	21-JUN-17 16:07	per0621022a
	Perchlorate-O(18)			0.436	ug/L		1	21-JUN-17 16:07	per0621022a

^ 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 #: 2017-1748
Work Order #: 425532**

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: 1674747

Prep Batch Number: 1674744

Sample Analysis

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

Sample ID	Client ID
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203813029	Method Blank (MB)
1203813030	Laboratory Control Sample (LCS)
1203813031	425417001(CAWA-17-133279) Matrix Spike (MS)
1203813032	425417001(CAWA-17-133279) 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 1203813029 (MB), 1203813030 (LCS), 1203813031 (CAWA-17-133279MS), 1203813032 (CAWA-17-133279MSD), 425532002 (CAWA-17-133299) and 425532006 (CAWA-17-133337) 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 425417001 (CAWA-17-133279) 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 (See Below). While the MSD exhibited a high bias, both the LCS and MS met acceptance limits. The data are reported.

Sample	Analyte	Value
1203813032 (CAWA-17-133279MSD)	TATB	153* (38%-149%)

The MS and/or MSD (See Below) did not meet acceptance criteria for the recovery of spiked analytes. The recoveries are attributed to over range concentrations of target analytes in the parent sample.

Sample	Analyte	Value
1203813032 (CAWA-17-133279MSD)	RDX	151* (57%-125%)

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information**Holding Time Specifications**

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as

days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Manual Integrations

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

Additional Comments

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

System Configuration

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

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

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

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: 2017-1748 GEL Work Order: 425532

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 JUL 2017

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133299

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532002

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625067.wiff

Date Analyzed: 28-JUN-17 06:01

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.262	U	0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.262	U	0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.262	U	0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.262	U	0.0838	0.262
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.262	U	0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.262	U	0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.262	U	0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	.262	U	0.0838	0.262
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.262	U	0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.262	U	0.0838	0.262
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.262	U	0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.262	U	0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.262	U	0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133299

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532002

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.262	U	0.0838	0.262
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.262	U	0.0838	0.262
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	.524	U	0.0838	0.524
479-45-8	Tetryl				
78-11-5	PETN	.524	U	0.105	0.524
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.524	U	0.157	0.524
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	1.05	U	0.314	1.05
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	1.05	U	0.314	1.05
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.314	1.05
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.62	U	0.524	2.62
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.62	U	0.524	2.62
6629-29-4	2,4-Diamino-6-nitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133337

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532006

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625068.wiff

Date Analyzed: 28-JUN-17 06:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.262	U	0.0838	0.262
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.262	U	0.0838	0.262
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.262	U	0.0838	0.262
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.262	U	0.0838	0.262
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.262	U	0.0838	0.262
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.262	U	0.0838	0.262
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.262	U	0.0838	0.262
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	.262	U	0.0838	0.262
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.262	U	0.0838	0.262
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.262	U	0.0838	0.262
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.262	U	0.0859	0.262
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.262	U	0.0838	0.262
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.262	U	0.0838	0.262
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133337

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 425532006

Sample Amount 955 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.262	U	0.0838	0.262
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.262	U	0.0838	0.262
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	.524	U	0.0838	0.524
479-45-8	Tetryl				
78-11-5	PETN	.524	U	0.105	0.524
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.524	U	0.157	0.524
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	1.05	U	0.314	1.05
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	1.05	U	0.314	1.05
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.314	1.05
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.62	U	0.524	2.62
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.62	U	0.524	2.62
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):** 2017-1748**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
425532002	CAWA-17-133299	101	55 - 115	
425532006	CAWA-17-133337	97	55 - 115	
1203813029	MB for batch 1674744	96	55 - 115	
1203813030	LCS for batch 1674744	109	55 - 115	
1203813031	CAWA-17-133279MS	84	55 - 115	
1203813032	CAWA-17-133279MSD	88	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) 2017-1748

Extract Batch Code: 1674744

Date Extracted: 16-JUN-17

GEL LCS ID: 1203813030

GEL LCSDUP ID: .

Analysis Date/Time: 28-JUN-17 08:57

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	4.57	91					70 - 110
2,4,6-Trinitrotoluene	5	5.18	104					69 - 113
2,4-Diamino-6-nitrotoluene	5	4.31	86					50 - 121
2,4-Dinitrotoluene	5	4.53	91					71 - 110
2,6-Diamino-4-nitrotoluene	5	3.78	76					53 - 127
2,6-Dinitrotoluene	5	4.62	92					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.63	93					70 - 112
3,5-Dinitroaniline	5	5.48	110					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.55	91					74 - 116
HMX	5	4.38	88					58 - 113
Nitrobenzene	5	4.29	86					64 - 115
PETN	5	4.95	99					57 - 126
RDX	5	3.81	76					64 - 117
TATB	2.5	2.74	110					47 - 135
Tetryl	5	3.74	75					55 - 122
m-Dinitrobenzene	5	4.86	97					74 - 117
m-Nitrotoluene	5	5.02	100					66 - 114
o-Nitrotoluene	5	3.86	77					64 - 115
p-Nitrotoluene	5	4.88	98					66 - 127
tris(o-cresyl) phosphate	5	3.77	75					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-17-133279

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Extract Batch Code: 1674744

Date Extracted: 16-JUN-17

GEL Spike ID: 1203813031

GEL SpikeDup ID: 1203813032

Analysis Date/Time: 28-JUN-17 00:54

MSD Analysis Date/Time: 28-JUN-17 01:28

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
m-Nitrotoluene	5.37634	0	3.83	71	4.64	84	19	30	59 - 120
o-Nitrotoluene	5.37634	.0183	3.4	63	3.71	67	9	30	56 - 119
p-Nitrotoluene	5.37634	0	3.64	68	3.94	72	8	30	61 - 129
tris(o-cresyl) phosphate	5.37634	.0926	4.8	88	4.95	88	3	30	38 - 105
1,3,5-Trinitrobenzene	5.37634	0	5.06	94	5.13	93	1	30	67 - 111
2,4,6-Trinitrotoluene	5.37634	.112	4.68	85	5.29	94	12	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.37634	0	4.28	80	5.19	94	19	30	50 - 121
2,4-Dinitrotoluene	5.37634	.0448	4.64	86	5.14	93	10	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.37634	0	6.26	116	6.63	121	6	30	53 - 127
2,6-Dinitrotoluene	5.37634	0	4.36	81	4.8	87	10	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.37634	.99	4.97	74	5.76	87	15	30	67 - 115
3,5-Dinitroaniline	5.37634	.198	5.87	106	6.11	108	4	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.37634	1.44	5.72	80	5.83	80	2	30	65 - 120
HMX	5.37634	15.2	18.8	68	18.8	66	0	30	44 - 128
Nitrobenzene	5.37634	0	4.54	84	4	73	12	30	62 - 116
PETN	5.37634	0	5.11	95	5.51	100	7	30	51 - 131
RDX	5.37634	16.1	21.4	99	24.4	151	13	30	57 - 125
TATB	2.68817	0	3.6	134	4.21	153	16	30	38 - 149
Tetryl	5.37634	0	4.27	79	4.32	79	1	30	50 - 126
m-Dinitrobenzene	5.37634	0	5.51	102	5.57	101	1	30	74 - 117

#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 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813029

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625055.wiff

Date Analyzed: 27-JUN-17 23:12

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.25	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.25	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.25	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.25	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.25	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.25	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.25	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	.25	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.25	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.25	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.25	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.25	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.25	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 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813029

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.25	U	0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.25	U	0.080	0.250
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	.5	U	0.080	0.500
479-45-8	Tetryl				
78-11-5	PETN	.5	U	0.100	0.500
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.5	U	0.150	0.500
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	1	U	0.300	1.00
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	1	U	0.300	1.00
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	1	U	0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.5	U	0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.5	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 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813030

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625072.wiff

Date Analyzed: 28-JUN-17 08:57

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.25	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	.25	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	.25	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
3058-38-6	TATB	2.74		0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
479-45-8	Tetryl	3.74		0.080	0.500
<i>479-45-8</i>	<i>Tetryl</i>				
78-30-8	tris(o-cresyl) phosphate	3.77		0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	3.78		0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
121-82-4	RDX	3.81		0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
88-72-2	o-Nitrotoluene	3.86		0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	4.29		0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.31		0.500	2.50
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
2691-41-0	HMX	4.38		0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
121-14-2	2,4-Dinitrotoluene	4.53		0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1674744

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813030

Sample Amount 1000 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
19406-51-0	4-Amino-2,6-dinitrotoluene	4.55		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.57		0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
606-20-2	2,6-Dinitrotoluene	4.62		0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.63		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
99-65-0	m-Dinitrobenzene	4.86		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
99-99-0	p-Nitrotoluene	4.88		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
78-11-5	PETN	4.95		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-08-1	m-Nitrotoluene	5.02		0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	5.18		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.48		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813031

Sample Amount 930 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625058.wiff

Date Analyzed: 28-JUN-17 00:54

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	.271		0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
13980-04-6	TNX	.362		0.086	0.269
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MXN	.512		0.086	0.269
<i>5755-27-1</i>	<i>MXN</i>				
88-72-2	o-Nitrotoluene	3.4		0.0882	0.269
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
3058-38-6	TATB	3.6		0.323	1.08
<i>3058-38-6</i>	<i>TATB</i>				
99-99-0	p-Nitrotoluene	3.64		0.161	0.538
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-08-1	m-Nitrotoluene	3.83		0.086	0.269
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
479-45-8	Tetryl	4.27		0.086	0.538
<i>479-45-8</i>	<i>Tetryl</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.28		0.538	2.69
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.36		0.086	0.269
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
98-95-3	Nitrobenzene	4.54		0.086	0.269
<i>98-95-3</i>	<i>Nitrobenzene</i>				
121-14-2	2,4-Dinitrotoluene	4.64		0.086	0.269
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.68		0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813031

Sample Amount 930 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	4.8		0.323	1.08
78-30-8	tris(o-cresyl) phosphate				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.97		0.086	0.269
35572-78-2	2-Amino-4,6-dinitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	5.06		0.086	0.269
99-35-4	1,3,5-Trinitrobenzene				
78-11-5	PETN	5.11		0.108	0.538
78-11-5	PETN				
99-65-0	m-Dinitrobenzene	5.51		0.086	0.269
99-65-0	m-Dinitrobenzene				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.72		0.086	0.269
19406-51-0	4-Amino-2,6-dinitrotoluene				
618-87-1	3,5-Dinitroaniline	5.87		0.323	1.08
618-87-1	3,5-Dinitroaniline				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.26		0.538	2.69
59229-75-3	2,6-Diamino-4-nitrotoluene				
2691-41-0	HMX	18.8		0.086	0.269
2691-41-0	HMX				
121-82-4	RDX	21.4		0.086	0.269
121-82-4	RDX				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133279(425417001MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1748

Matrix: WATER

GEL Sample ID: 1203813032

Sample Amount 910 mL

Date Received: 15-JUN-17

Moisture: .

Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0625059.wiff

Date Analyzed: 28-JUN-17 01:28

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	.294		0.0879	0.275
80251-29-2	DNX				
13980-04-6	TNX	.405		0.0879	0.275
13980-04-6	TNX				
5755-27-1	MNX	.568		0.0879	0.275
5755-27-1	MNX				
88-72-2	o-Nitrotoluene	3.71		0.0901	0.275
88-72-2	o-Nitrotoluene				
99-99-0	p-Nitrotoluene	3.94		0.165	0.549
99-99-0	p-Nitrotoluene				
98-95-3	Nitrobenzene	4		0.0879	0.275
98-95-3	Nitrobenzene				
3058-38-6	TATB	4.21		0.330	1.10
3058-38-6	TATB				
479-45-8	Tetryl	4.32		0.0879	0.549
479-45-8	Tetryl				
99-08-1	m-Nitrotoluene	4.64		0.0879	0.275
99-08-1	m-Nitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.8		0.0879	0.275
606-20-2	2,6-Dinitrotoluene				
78-30-8	tris(o-cresyl) phosphate	4.95		0.330	1.10
78-30-8	tris(o-cresyl) phosphate				
99-35-4	1,3,5-Trinitrobenzene	5.13		0.0879	0.275
99-35-4	1,3,5-Trinitrobenzene				
121-14-2	2,4-Dinitrotoluene	5.14		0.0879	0.275
121-14-2	2,4-Dinitrotoluene				

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Sample Amount 910 mL

Date Received: 15-JUN-17

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Extraction Batch ID: 1674744

Extraction Type Sol Exchange

Date Extracted: 16-JUN-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	5.19		0.549	2.75
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	5.29		0.0879	0.275
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
78-11-5	PETN	5.51		0.110	0.549
<i>78-11-5</i>	<i>PETN</i>				
99-65-0	m-Dinitrobenzene	5.57		0.0879	0.275
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.76		0.0879	0.275
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.83		0.0879	0.275
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	6.11		0.330	1.10
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	6.63		0.549	2.75
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
2691-41-0	HMX	18.8		0.0879	0.275
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	24.4		0.0879	0.275
<i>121-82-4</i>	<i>RDX</i>				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1748Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 16:29GEL Data File: EXP0625001.wiffInstrument ID: LCMSMS7Column: 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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.69
p-Nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1748Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 26-JUN-17 17:03GEL Data File: EXP0625002.wiffInstrument ID: LCMSMS7Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.41
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 26-JUN-17 21:36

GEL Data File: EXP0625010.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	1.48
tris(o-cresyl) phosphate	0	6.15
TATB	0	1.57
3,5-Dinitroaniline	0	1.82
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	1.65
DNX	0	2.65
MNX	0	2.03
TNX	0	2.15
1,3,5-Trinitrobenzene	0	1.85
2,4,6-Trinitrotoluene	0	1.65
2,4-Dinitrotoluene	0	1.35
2,6-Dinitrotoluene	0	1.18
2-Amino-4,6-dinitrotoluene	0	1.51
4-Amino-2,6-dinitrotoluene	0	1.49
HMX	0	2.19
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	2.17
RDX	0	2.09
Tetryl	0	1.99
m-Dinitrobenzene	0	1.4
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.58
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 26-JUN-17 23:52

GEL Data File: EXP0625014.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
TNX	0	1.56
1,3,5-Trinitrobenzene	0	1.24
2,4,6-Trinitrotoluene	0	1.29
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	1.27
4-Amino-2,6-dinitrotoluene	0	1.32
HMX	0	1.93
Nitrobenzene	0	0
Nitroglycerin	0	2.25
PETN	0	1.68
RDX	0	1.77
Tetryl	0	1.43
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.62
p-Nitrotoluene	0	5
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	6.41
TATB	0	0
3,5-Dinitroaniline	0	1.36
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	1.77
MNX	0	1.47

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 27-JUN-17 02:09

GEL Data File: EXP0625018.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.36
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 27-JUN-17 03:17

GEL Data File: EXP0625020.wiff

Instrument ID: LCMSMS7

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
Nitroglycerin	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	3.68
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.22
TATB	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 27-JUN-17 03:51

GEL Data File: EXP0625021.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
o-Nitrotoluene	0	1.71
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 27-JUN-17 08:58

GEL Data File: EXP0625030.wiff

Instrument ID: LCMSMS7

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	1.31
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
Nitroglycerin	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): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 27-JUN-17 09:33

GEL Data File: EXP0625031.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
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-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.14
2,6-Dinitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 27-JUN-17 10:41

GEL Data File: EXP0625033.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.75
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.92
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 27-JUN-17 16:56

GEL Data File: EXP0625044.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.39
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.28
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 27-JUN-17 22:03

GEL Data File: EXP0625053.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	3.81
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	5.9
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 28-JUN-17 04:53

GEL Data File: EXP0625065.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.7
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.29
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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 28-JUN-17 07:44

GEL Data File: EXP0625070.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	.52
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	.16
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1748

Lab Code: GEL

Lab Sample ID: XIBLK14

Analysis Date: 28-JUN-17 15:39

GEL Data File: EXP0625083.wiff

Instrument ID: LCMSMS7

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.99
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
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	1.54
p-Nitrotoluene	0	0

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 03-JUL-17	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LC-MS/MS	Test / Method: SW846 3535A/8330B	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1674747	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 425417(2017-1734),425520(2017-1749),425532(2017-1748) Application Issues: Failed Recovery for MS/MSD, or PS/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. One or more of the required spiking analytes were not within the acceptance limits in the matrix spike duplicate (MSD). 1203813032 (CAWA-17-133279MSD) recovered TATB at 153% (38%-149%) and RDX at 151% (57%-125%).		1. While the MSD exhibited a high bias, both the LCS and MS met acceptance limits for TATB. TATB was not detected in the associated samples. The biased high recovery in the MSD is attributed to an over range concentration of RDX in the parent sample. The data are reported.	

Originator's Name:

Michael Penny 03-JUL-17

Data Validator/Group Leader:

Charles Wilson 05-JUL-17

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1748
Work Order #: 425532

Sample ID	Client ID
425532002	CAWA-17-133299
425532003	CAWA-17-133327
425532004	CAWA-17-133335
425532006	CAWA-17-133337
1203812396	Method Blank (MB) ICP
1203812397	Laboratory Control Sample (LCS)
1203812400	425532003(CAWA-17-133327L) Serial Dilution (SD)
1203812398	425532003(CAWA-17-133327D) Sample Duplicate (DUP)
1203812399	425532003(CAWA-17-133327S) Matrix Spike (MS)
1203812439	Method Blank (MB) ICP-MS
1203812440	Laboratory Control Sample (LCS)
1203812443	425532003(CAWA-17-133327L) Serial Dilution (SD)
1203812441	425532003(CAWA-17-133327D) Sample Duplicate (DUP)
1203812442	425532003(CAWA-17-133327S) Matrix Spike (MS)
1203813067	Method Blank (MB) CVAA
1203813068	Laboratory Control Sample (LCS)
1203813073	425532002(CAWA-17-133299L) Serial Dilution (SD)
1203813069	425532002(CAWA-17-133299D) Sample Duplicate (DUP)
1203813071	425532002(CAWA-17-133299S) Matrix Spike (MS)

Sample Analysis

Samples 425532002,003,004 and 006 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1674452, 1674473, 1674758 and 1680103
Prep Batch :	1674451, 1674472 and 1674757
Standard Operating Procedures:	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 30, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

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

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

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

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of sodium. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 425532003 (CAWA-17-133327) and 425532004 (CAWA-17-133335)-ICP.

ICSA/ICSAB Statement

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

Continuing Calibration Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 425532003 (CAWA-17-133327)-ICP and ICP-MS and 425532002 (CAWA-17-133299)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement

The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality

control acceptance criteria for percent recoveries for all applicable analytes.

Duplicate Relative Percent Difference (RPD) Statement

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

Serial Dilution % Difference Statement

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

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Additional Comments

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

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

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

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the

requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2017-1748 GEL Work Order: 425532

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: 10 JUL 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532002**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133299**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:11	061917W1-4	1674758

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532003**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133327**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:20	061917W1-4	1674758

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425532003

BASIS: As Received

DATE COLLECTED 13-JUN-17

CLIENT ID: CAWA-17-133327

LEVEL: Low

DATE RECEIVED 15-JUN-17

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-38-2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-39-3	Barium	13.2	ug/L		1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-70-2	Calcium	9160	ug/L		50	200	200	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7439-95-4	Magnesium	2830	ug/L		110	300	300	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7439-98-7	Molybdenum	0.607	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-09-7	Potassium	919	ug/L		50	150	150	1	P	HSC	06/28/17 15:18	062817-1	1674452
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7631-86-9	Silica	55900	ug/L		53	213	213	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-23-5	Sodium	7520	ug/L		100	300	300	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-24-6	Strontium	42.3	ug/L		1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-61-1	Uranium	0.372	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/30/17 08:24	170629-3	1674473
7440-62-2	Vanadium	2.65	ug/L	J	1	5	5	1	P	HSC	06/28/17 15:18	062817-1	1674452
7440-66-6	Zinc	9.03	ug/L	J	3.3	10	10	1	P	HSC	06/29/17 10:37	062917-2	1674452

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425532003**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133327**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	34.5	mg/L		0.453	1.24	1.24	1		TXT1	07/06/17 10:28		1680103

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674452	1674451	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674473	1674472	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532004**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133335**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:25	061917W1-4	1674758

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 425532004

BASIS: As Received

DATE COLLECTED 13-JUN-17

CLIENT ID: CAWA-17-133335

LEVEL: Low

DATE RECEIVED 15-JUN-17

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-38-2	Arsenic	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-39-3	Barium	13.5	ug/L		1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-70-2	Calcium	9500	ug/L		50	200	200	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-47-3	Chromium	10	ug/L	U	3	10	10	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7439-95-4	Magnesium	2960	ug/L		110	300	300	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7439-98-7	Molybdenum	0.602	ug/L		0.2	0.5	0.5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-09-7	Potassium	1020	ug/L		50	150	150	1	P	HSC	06/28/17 15:14	062817-1	1674452
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7631-86-9	Silica	57400	ug/L		53	213	213	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-23-5	Sodium	7940	ug/L		100	300	300	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-24-6	Strontium	43.8	ug/L		1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-61-1	Uranium	0.368	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/30/17 08:37	170629-3	1674473
7440-62-2	Vanadium	2.4	ug/L	J	1	5	5	1	P	HSC	06/28/17 15:14	062817-1	1674452
7440-66-6	Zinc	7.26	ug/L	J	3.3	10	10	1	P	HSC	06/29/17 10:34	062917-2	1674452

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 425532004**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133335**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	35.9	mg/L		0.453	1.24	1.24	1		TXT1	07/06/17 10:28		1680103

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674452	1674451	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674473	1674472	SW846 3005A	50	mL	50	mL	06/16/17	SXW1
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1748**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 425532006**BASIS:** As Received**DATE COLLECTED** 13-JUN-17**CLIENT ID:** CAWA-17-133337**LEVEL:** Low**DATE RECEIVED** 15-JUN-17**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	MTM1	06/19/17 11:26	061917W1-4	1674758

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1674758	1674757	EPA 245.1/245.2 Prep	20	mL	20	mL	06/16/17	AXS5

***Analytical Methods:**

AV EPA 245.2 1974

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2017-1748

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>
1203812396	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	89.6	ug/L	+/-213	J	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	3.3	ug/L	+/-10	U	P	3.3	10
1203812439	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
1203813067	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

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Matrix Spike Summary

SDG NO. 2017-1748 Client ID: CAWA-17-133327S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425532003 Spike ID: 1203812399

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	4820		68	U	5000	96.4		P
Barium	ug/L	75-125	512		13.2		500	99.8		P
Beryllium	ug/L	75-125	504		1	U	500	101		P
Boron	ug/L	75-125	520		15	U	500	102		P
Calcium	ug/L	75-125	14400		9160		5000	106		P
Cobalt	ug/L	75-125	498		1	U	500	99.6		P
Copper	ug/L	75-125	512		3	U	500	102		P
Iron	ug/L	75-125	4870		30	U	5000	97.1		P
Magnesium	ug/L	75-125	7890		2830		5000	101		P
Manganese	ug/L	75-125	497		2	U	500	99.3		P
Potassium	ug/L	75-125	5980		919		5000	101		P
Silica	ug/L		68600		55900		10700	119	N/A	P
Sodium	ug/L	75-125	12800		7520		5000	106		P
Strontium	ug/L	75-125	514		42.3		500	94.4		P
Tin	ug/L	75-125	504		2.5	U	500	101		P
Vanadium	ug/L	75-125	506		2.65	J	500	101		P
Zinc	ug/L	75-125	501		9.03	J	500	98.4		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Matrix Spike Summary

SDG NO. 2017-1748 Client ID CAWA-17-133327S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 425532003 Spike ID: 1203812442

<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	49.1		1	U	50	97.5		MS
Arsenic	ug/L	75-125	51.9		2	U	50	101		MS
Cadmium	ug/L	75-125	52.4		0.3	U	50	105		MS
Chromium	ug/L	75-125	51.2		3	U	50	99.6		MS
Lead	ug/L	75-125	50.7		0.5	U	50	101		MS
Nickel	ug/L	75-125	46.4		0.6	U	50	92.2		MS
Selenium	ug/L	75-125	53.8		2	U	50	107		MS
Silver	ug/L	75-125	51		0.3	U	50	102		MS
Thallium	ug/L	75-125	47		0.6	U	50	94.1		MS
Uranium	ug/L	75-125	50.1		0.372		50	99.5		MS
Molybdenum	ug/L	75-125	53.6		0.607		50	106		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1748 **Client ID:** CAWA-17-133299S**Contract:** ESHL00114 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 425532002 **Spike ID:** 1203813071

<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	2.05		0.067	U	2	102		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
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Duplicate Sample Summary

SDG No.: 2017-1748

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133327D

Matrix: WATER

Level: Low

Sample ID: 425532003

Duplicate ID: 1203812398

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68 U		68 U				P
Barium	ug/L	+/-5	13.2		13.5		2.67		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15 U		15 U				P
Calcium	ug/L	+/-20%	9160		9670		5.44		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3 U		3 U				P
Iron	ug/L		30 U		30 U				P
Magnesium	ug/L	+/-20%	2830		3010		6.37		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	919		1030		11.5		P
Silica	ug/L	+/-20%	55900		57500		2.96		P
Sodium	ug/L	+/-20%	7520		7900		4.94		P
Strontium	ug/L	+/-20%	42.3		43.9		3.79		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	2.65 J		2.4 J		10.1		P
Zinc	ug/L	+/-10	9.03 J		6.02 J		40		P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2017-1748

Lab Code: GEL

Contract: ESHL00114

Client ID: CAWA-17-133327D

Matrix: WATER

Level: Low

Sample ID: 425532003

Duplicate ID: 1203812441

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	0.607		0.609		.329		MS
Nickel	ug/L		0.6 U		0.6 U				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	0.372		0.369		.81		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2017–1748**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAWA–17–133299D**Matrix:** WATER**Level:** Low**Sample ID:** 425532002**Duplicate ID:** 1203813069**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. 2017-1748

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>
1203812397								
	Aluminum	ug/L	5000	4950		99	80-120	P
	Barium	ug/L	500	502		100	80-120	P
	Beryllium	ug/L	500	499		99.7	80-120	P
	Boron	ug/L	500	505		101	80-120	P
	Calcium	ug/L	5000	4950		99.1	80-120	P
	Cobalt	ug/L	500	502		100	80-120	P
	Copper	ug/L	500	502		100	80-120	P
	Iron	ug/L	5000	4920		98.4	80-120	P
	Magnesium	ug/L	5000	5110		102	80-120	P
	Manganese	ug/L	500	501		100	80-120	P
	Potassium	ug/L	5000	5190		104	80-120	P
	Silica	ug/L	10700	10500		98	80-120	P
	Sodium	ug/L	5000	4930		98.6	80-120	P
	Strontium	ug/L	500	480		95.9	80-120	P
	Tin	ug/L	500	501		100	80-120	P
	Vanadium	ug/L	500	502		100	80-120	P
	Zinc	ug/L	500	450		90	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1748

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>
1203812440								
	Antimony	ug/L	50	50.8		102	80-120	MS
	Arsenic	ug/L	50	51.9		104	80-120	MS
	Cadmium	ug/L	50	51.8		104	80-120	MS
	Chromium	ug/L	50	50.3		101	80-120	MS
	Lead	ug/L	50	50.8		102	80-120	MS
	Molybdenum	ug/L	50	51.7		103	80-120	MS
	Nickel	ug/L	50	47.9		95.8	80-120	MS
	Selenium	ug/L	50	53.8		108	80-120	MS
	Silver	ug/L	50	54.3		109	80-120	MS
	Thallium	ug/L	50	46.6		93.2	80-120	MS
	Uranium	ug/L	50	49.2		98.4	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1748

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>
1203813068	Mercury	ug/L	2	2.04		102	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748

Client ID: CAWA-17-133327L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 425532003

Serial Dilution ID: 1203812400

<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	68	U	340	U				P
Barium	13.2		12.6	J	4.487			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	9160		8960		2.2		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	2830		3070		8.539			P
Manganese	2	U	10	U				P
Potassium	919		1090		18.925			P
Silica	55900		54400		2.659		10	P
Sodium	7520		7260		3.453		10	P
Strontium	42.3		40.8		3.457			P
Tin	2.5	U	12.5	U				P
Vanadium	2.65	J	5	U	40.423			P
Zinc	9.03	J	23.9	J	165.113			P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748

Client ID: CAWA-17-133327L

Contract: ESHL00114

Matrix: LIQUID

Level: Low

Sample ID: 425532003

Serial Dilution ID: 1203812443

<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	.607		1	U	2.965			MS
Nickel	.6	U	3	U				MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.372		.39	J	4.839			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1748 **Client ID:** CAWA-17-133299L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 425532002 **Serial Dilution ID:** 1203813073

<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 #: 2017-1748
Work Order #: 425532**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1675261

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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203814348	Method Blank (MB)
1203814349	Laboratory Control Sample (LCS)
1203814350	425532002(CAWA-17-133299) Sample Duplicate (DUP)
1203814351	425632001(CAWA-17-133300) Sample Duplicate (DUP)
1203814352	425632001(CAWA-17-133300) Post Spike (PS)
1203814353	425532002(CAWA-17-133299) 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 425532002 (CAWA-17-133299) and 425632001 (CAWA-17-133300) 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 samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages

electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1674062	Method:	WSP-CN(T)
Prep Batch :	1674061	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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203811489	Method Blank (MB)
1203811490	Laboratory Control Sample (LCS)
1203811491	425417001(CAWA-17-133279) Sample Duplicate (DUP)
1203811492	425417001(CAWA-17-133279) Matrix Spike (MS)
1203814049	425417001(CAWA-17-133279) Matrix Spike Duplicate (MSD)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 19.

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.

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 425417001 (CAWA-17-133279) 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.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

Samples 1203811490 (LCS), 1203811491 (CAWA-17-133279DUP), 1203811492 (CAWA-17-133279MS) and 1203814049 (CAWA-17-133279MSD) were re-analyzed to verify the results.

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: 1674677

Method: WSP-ANIONS

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812850	Method Blank (MB)
1203812851	Laboratory Control Sample (LCS)
1203812852	425520006(CALA-17-139174) Sample Duplicate (DUP)
1203812853	425520006(CALA-17-139174) 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 425520006 (CALA-17-139174) 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 Dilutions

The following samples 1203812852 (CALA-17-139174DUP) and 1203812853 (CALA-17-139174PS) were 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.

Sample Re-analysis

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

Miscellaneous Information

Manual Integrations

Manual integrations were not required for the samples in this SDG.

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: 1674632 **Method:** NH3
Prep Batch : 1674631 **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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812733	Method Blank (MB)
1203812734	Laboratory Control Sample (LCS)
1203812737	425532003(CAWA-17-133327) Sample Duplicate (DUP)
1203812738	425532003(CAWA-17-133327) 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 425532003 (CAWA-17-133327) was selected for QC analysis.

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

The MS/PS recovery for this sample set was within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an

effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1673872	Method:	TKN
Prep Batch :	1673870	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
425532002	CAWA-17-133299
425532006	CAWA-17-133337
1203811089	Method Blank (MB)
1203811090	Laboratory Control Sample (LCS)
1203811091	425079001(CAWA-17-133286) Sample Duplicate (DUP)
1203811092	425079001(CAWA-17-133286) 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 425079001 (CAWA-17-133286) 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

Samples 1203811089 (MB), 1203811090 (LCS), 1203811091 (CAWA-17-133286DUP), 1203811092 (CAWA-17-133286MS), 425532002 (CAWA-17-133299) and 425532006 (CAWA-17-133337) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Miscellaneous Information

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1674641

Method: NO3NO2

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203812760	Method Blank (MB)
1203812761	Laboratory Control Sample (LCS)
1203812762	425417002(CAWA-17-133307) Sample Duplicate (DUP)
1203812766	425417002(CAWA-17-133307) 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# 8.

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 425417002 (CAWA-17-133307) was selected for QC analysis.

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

The MS/PS recoveries for this sample set were within the required acceptance limits where applicable.

Duplicate Relative Percent Difference (RPD) Statement

The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information**Additional Comments**

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1673877	Method:	PO4
Prep Batch :	1673876	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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203811104	Method Blank (MB)
1203811105	Laboratory Control Sample (LCS)
1203811108	425079002(CAWA-17-133314) Sample Duplicate (DUP)
1203811109	425079002(CAWA-17-133314) 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 425079002 (CAWA-17-133314) 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

Samples 1203811104 (MB) and 1203811105 (LCS) were 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: 1675830

Method: TDS

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203815627	Method Blank (MB)
1203815628	Laboratory Control Sample (LCS)
1203815629	425520006(CALA-17-139174) 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 425520006 (CALA-17-139174) 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	1203815629 (CALA-17-139174DUP)	7.41* (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: 1679218

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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203823669	Laboratory Control Sample (LCS)
1203823670	425520005(CALA-17-139173) Sample Duplicate (DUP)
1203823671	426779001(BDW01-17-139079) 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 425520005 (CALA-17-139173) and 426779001 (BDW01-17-139079) 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:

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Method/Analysis Information

Product: pH

Analytical Batch: 1676572 **Method:** PH

Sample Analysis

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

Sample ID	Client ID
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203817344	Laboratory Control Sample (LCS)
1203817346	425532004(CAWA-17-133335) 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 425532004 (CAWA-17-133335) 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
1203817346 (CAWA-17-133335DUP)	pH	Received 15-JUN-17, out of holding 13-JUN-17
425532003 (CAWA-17-133327)	pH	Received 15-JUN-17, out of holding 13-JUN-17
425532004 (CAWA-17-133335)	pH	Received 15-JUN-17, out of holding 13-JUN-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: 1676562 **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
425532003	CAWA-17-133327
425532004	CAWA-17-133335
1203817292	Laboratory Control Sample (LCS)
1203817296	425532004(CAWA-17-133335) Sample Duplicate (DUP)
1203817299	425532004(CAWA-17-133335) 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 425532004 (CAWA-17-133335) 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:

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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: 2017-1748 GEL Work Order: 425532


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: 11 JUL 2017

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133299
Sample ID: 425532002
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	0.512	0.330	1.00	mg/L		1	TSM	06/23/17	0434	1675261	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/20/17	0848	1674062	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	1046	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/19/17	1339	1674061
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133327
Sample ID: 425532003
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	MAR1	06/21/17	2239	1674677	1
Chloride		1.56	0.067	0.200	mg/L		1					
Fluoride		0.119	0.033	0.100	mg/L		1					
Sulfate		1.63	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.103	0.017	0.050	mg/L	1.00	1	KLP1	06/21/17	1151	1674632	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.276	0.017	0.050	mg/L		1	AXH3	06/21/17	0821	1674641	3
PO4 "As Received"												
Phosphorus, Total as P		0.0508	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1054	1673877	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		98.6	3.40	14.3	mg/L			KLP1	06/20/17	1512	1675830	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		54.0	1.45	4.00	mg/L			RXB5	06/23/17	1601	1676562	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		112	1.00	1.00	umhos/cm		1	SXM7	07/06/17	1025	1679218	7
PH "As Received"												
pH at Temp 22.3C	H	7.80	0.010	0.100	SU		1	RXB5	06/23/17	1600	1676572	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	06/20/17	1500	1674631
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

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Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133327
Sample ID: 425532003

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133335
Sample ID: 425532004
Matrix: W
Collect Date: 13-JUN-17 10:35
Receive Date: 15-JUN-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	MAR1	06/21/17	2308	1674677	1
Chloride		1.56	0.067	0.200	mg/L		1					
Fluoride		0.125	0.033	0.100	mg/L		1					
Sulfate		1.67	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.116	0.017	0.050	mg/L	1.00	1	KLP1	06/21/17	1153	1674632	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.415	0.017	0.050	mg/L		1	AXH3	06/21/17	0822	1674641	3
PO4 "As Received"												
Phosphorus, Total as P		0.0546	0.020	0.050	mg/L	1.00	1	KLP1	06/20/17	1055	1673877	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		98.6	3.40	14.3	mg/L			KLP1	06/20/17	1512	1675830	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		56.2	1.45	4.00	mg/L			RXB5	06/23/17	1604	1676562	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		112	1.00	1.00	umhos/cm		1	SXM7	07/06/17	1027	1679218	7
PH "As Received"												
pH at Temp 22.5C	H	7.87	0.010	0.100	SU		1	RXB5	06/23/17	1602	1676572	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	06/20/17	1500	1674631
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	AXH3	06/19/17	1700	1673876

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Certificate of Analysis

Report Date: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133335
Sample ID: 425532004

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: July 11, 2017

Company : Los Alamos National Laboratory
Address : TA-03, SM271, Drop Pt. 02U, Rm111

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene
Project: LANL- WQH Water Samples

Client SDG: 2017-1748

Client Sample ID: CAWA-17-133337

Project: ESHL00114

Sample ID: 425532006

Client ID: ARSL004

Matrix: W

Collect Date: 13-JUN-17 10:35

Receive Date: 15-JUN-17

Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis												
SW 9060 Total Organic Carbon "As Received"												
Total Organic Carbon Average	J	0.435	0.330	1.00	mg/L		1	TSM	06/23/17	0651	1675261	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	06/20/17	0849	1674062	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	06/21/17	1047	1673872	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/19/17	1339	1674061
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	AXH3	06/19/17	1700	1673870

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

Quality Control Summary

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QC Summary

Report Date: July 11, 2017

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

Contact: Mr. Keith Greene

Workorder: 425532

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1675261										
QC1203814350	425532002	DUP									
Total Organic Carbon Average	J	0.512	J	0.532	mg/L	3.83	^	(+/-1.00)	TSM	06/23/17	05:21
QC1203814351	425632001	DUP									
Total Organic Carbon Average	J	0.596	J	0.616	mg/L	3.3	^	(+/-1.00)		06/23/17	12:26
QC1203814349	LCS										
Total Organic Carbon Average	10.0			9.82	mg/L			98.2 (80%-120%)		06/23/17	02:53
QC1203814348	MB										
Total Organic Carbon Average			U	ND	mg/L					06/23/17	02:41
QC1203814352	425632001	PS									
Total Organic Carbon Average	10.0	J	0.596	11.0	mg/L			104 (75%-125%)		06/23/17	13:10
QC1203814353	425532002	PS									
Total Organic Carbon Average	10.0	J	0.512	11.2	mg/L			107 (75%-125%)		06/23/17	06:06
Flow Injection Analysis											
Batch	1674062										
QC1203811491	425417001	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	06/20/17	10:26
QC1203811490	LCS										
Cyanide, Total	50.0			54.1	ug/L			108 (90%-110%)		06/20/17	08:44
QC1203811489	MB										
Cyanide, Total			U	ND	ug/L					06/20/17	08:32
QC1203811492	425417001	MS									
Cyanide, Total	100	U	ND	105	ug/L			105 (90%-110%)		06/20/17	10:27

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QC Summary

Workorder: 425532

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Flow Injection Analysis											
Batch	1674062										
QC1203814049	425417001	MSD									
Cyanide, Total	100	U	ND	105	ug/L	0	105	(0%-20%)	AXH3	06/20/17	10:28
Ion Chromatography											
Batch	1674677										
QC1203812852	425520006	DUP									
Bromide		J	0.186	J	0.173	mg/L	6.85	^	(+/-0.200)	MAR1	06/21/17 21:41
Chloride			16.8		16.9	mg/L	0.776		(0%-20%)		06/23/17 16:43
Fluoride			0.548		0.549	mg/L	0.182		(0%-20%)		06/21/17 21:41
Sulfate			19.9		19.9	mg/L	0.163		(0%-20%)		06/23/17 16:43
QC1203812851	LCS										
Bromide	1.25				1.37	mg/L		110	(80%-120%)		06/21/17 20:15
Chloride	5.00				5.11	mg/L		102	(80%-120%)		
Fluoride	2.50				2.64	mg/L		106	(80%-120%)		
Sulfate	10.0				10.6	mg/L		106	(80%-120%)		
QC1203812850	MB										
Bromide			U		ND	mg/L					06/21/17 19:46
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					

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QC Summary

Workorder: 425532

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1674677										
QC1203812853	425520006	PS									
Bromide	1.25	J	0.186	1.52	mg/L		107	(75%-125%)	MAR1	06/21/17	22:10
Chloride	5.00		3.35	8.51	mg/L		103	(75%-125%)		06/23/17	17:12
Fluoride	2.50		0.548	3.19	mg/L		106	(75%-125%)		06/21/17	22:10
Sulfate	10.0		3.98	14.0	mg/L		100	(75%-125%)		06/23/17	17:12
Nutrient Analysis											
Batch	1673872										
QC1203811091	425079001	DUP									
Nitrogen, Total Kjeldahl		U	ND	J	0.038	mg/L	200		KLP1	06/21/17	09:54
QC1203811090	LCS										
Nitrogen, Total Kjeldahl	1.00			1.10	mg/L		110	(90%-110%)		06/21/17	09:50
QC1203811089	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/21/17	09:50
QC1203811092	425079001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.974	mg/L		97.4	(90%-110%)		06/21/17	09:55
Batch	1673877										
QC1203811108	425079002	DUP									
Phosphorus, Total as P			0.0742	0.0979	mg/L	27.5	^	(+/-0.050)	KLP1	06/20/17	10:29
QC1203811105	LCS										
Phosphorus, Total as P	1.00			0.975	mg/L		97.5	(80%-124%)		06/20/17	10:38
QC1203811104	MB										
Phosphorus, Total as P			J	0.0324	mg/L					06/20/17	10:38

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QC Summary

Workorder: 425532

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1673877										
QC1203811109	425079002	MS									
Phosphorus, Total as P	1.00	0.0742		1.23	mg/L		116	(63%-139%)	KLP1	06/20/17	10:30
Batch	1674632										
QC1203812737	425532003	DUP									
Nitrogen, Ammonia		0.103		0.110	mg/L	6.57	^	(+/-0.050)	KLP1	06/21/17	11:52
QC1203812734	LCS										
Nitrogen, Ammonia	1.00			1.06	mg/L		106	(90%-110%)		06/21/17	11:36
QC1203812733	MB										
Nitrogen, Ammonia			J	0.0399	mg/L					06/21/17	11:35
QC1203812738	425532003	MS									
Nitrogen, Ammonia	1.00	0.103		1.08	mg/L		97.7	(90%-110%)		06/21/17	11:53
Batch	1674641										
QC1203812762	425417002	DUP									
Nitrogen, Nitrate/Nitrite		0.0507	J	0.0499	mg/L	1.59	^	(+/-0.050)	AXH3	06/21/17	08:04
QC1203812761	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.959	mg/L		95.9	(90%-110%)		06/21/17	07:57
QC1203812760	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/21/17	07:56
QC1203812766	425417002	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.0507		1.01	mg/L		95.9	(90%-110%)		06/21/17	08:05
Solids Analysis											
Batch	1675830										
QC1203815629	425520006	DUP									
Total Dissolved Solids		170		180	mg/L	7.41	*	(0%-5%)	KLP1	06/20/17	15:12

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QC Summary

Workorder: 425532

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Solids Analysis											
Batch	1675830										
QC1203815628	LCS										
Total Dissolved Solids	300			287	mg/L		95.7	(95%-105%)	KLP1	06/20/17	15:12
QC1203815627	MB										
Total Dissolved Solids			U	ND	mg/L					06/20/17	15:12
Titration and Ion Analysis											
Batch	1676562										
QC1203817296	425532004	DUP									
Alkalinity, Total as CaCO3		56.2		55.8	mg/L	0.714		(0%-20%)	RXB5	06/23/17	16:04
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203817292	LCS										
Alkalinity, Total as CaCO3	100			110	mg/L		110	(90%-110%)		06/23/17	12:29
QC1203817299	425532004	MS									
Alkalinity, Total as CaCO3	100	56.2		158	mg/L		102	(80%-120%)		06/23/17	16:06
Batch	1676572										
QC1203817346	425532004	DUP									
pH	H	7.87	H	7.88	SU	0.127		(0%-5%)	RXB5	06/23/17	16:03
QC1203817344	LCS										
pH	7.00			7.04	SU		101	(99%-101%)		06/23/17	12:23
Batch	1679218										
QC1203823670	425520005	DUP									
Conductivity		311		310	umhos/cm	0.322		(0%-10%)	SXM7	07/06/17	10:23
QC1203823671	426779001	DUP									
Conductivity		455		455	umhos/cm	0		(0%-10%)		07/06/17	10:47

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QC Summary

Workorder: 425532

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1679218										
QC1203823669	LCS										
Conductivity	1410			1360	umhos/cm		96.2	(95%-105%)	SXM7	07/06/17	10:12

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- 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.