General Engineering Laboratories, Inc., Charleston, SC.
2040 Savage Rd
Charleston SC 29407

Chain of Custody/Analysis Request

COC/Lab Request #: 2013-951

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Client Contact:

Lab Agreement # : 126310011

Project Number :

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐
7 Day - ☐
14 Day - ☐
21 Day - ☐
28 Day - ☒

Site Name: Los Alamos National Laboratory

Rad Screening Info: Yes, Below Background

Lab Reporting Limit Type:

Special Instructions:

Field Sample ID	Sample Date	Sample Time	Sample Matrix	WSP-8260B-VOA	WSP-CL04	WSP-GENINORG	WSP-GrossA/B	WSP-Met+B+SN+SR+U	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CALA-13-33423	Jun 12 2013	10:53	W	2			1			1	1
CALA-13-33431	Jun 12 2013	10:53	W		1	1		1	1		
CALA-13-33416	Jun 12 2013	10:53	W	2							

Special Instructions:

Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Sherwood	S. Sherwood	6/13/13 3pm			
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4234 **EVENT NAME:** LA/Pueblo (TA-21 and General Surveillance Monitoring Group) Q3 MY2013 Sampling Event

SAMPLE ID: CALA-13-33416 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/12/2013	**FIELD MATRIX:**	WG	sh
TIME COLLECTED (HH:MM):		1053	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	QC
LOCATION ID:	LLAO-4		**FIELD PREP:**	UF	↓
LOCATION TYPE:			**FIELD QC TYPE:**	FTB	
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	3	HCL	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS: NA DS 6/12/13

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Oxidation-Reduction Potential _____ MV pH _____ SU

Specific Conductance _____ uS/cm Temperature _____ deg C Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shenko

RELINQUISHED BY (Printed Name) Alex Stroke **(Signature)**	**Date/Time** 6/12/13 1210	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)** Sheri Sherwood	**Date/Time** 6/12/13 1210
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 05/29/2013

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4234

EVENT NAME: LA/Pueblo (TA-21 and General Surveillance Monitoring Group) Q3 MY2013 Sampling Event

SAMPLE ID: CALA-13-33423

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		6/12/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		6/12/13 1210 1053	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	BP
LOCATION ID:	LLAO-4	↓	**FIELD PREP:**	UF	ok
LOCATION TYPE:	MON	↓	**FIELD QC TYPE:**	REG	↓
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-GrossA/B	1 LITER POLY	1	NONE	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen 3.78 mg/L Oxidation-Reduction Potential 151.9 MV pH 6.93 SU

Specific Conductance 399 uS/cm Temperature 14.03 deg C Turbidity 0.7 NTU

COLLECTED BY (PRINT) M. Stelo

RELINQUISHED BY (Printed Name) Andrew Stelo **(Signature)**	**Date/Time** 6/12/13 1210	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)** Sheri Sherwood	**Date/Time** 6/12/13 1210
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 05/29/2013

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4234

EVENT NAME: LA/Pueblo (TA-21 and General Surveillance Monitoring Group) Q3 MY2013 Sampling Event

SAMPLE ID: CALA-13-33431

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/12/2013	**FIELD MATRIX:**	WG	ok
TIME COLLECTED (HH:MM):		1053	**MEDIA:**	UA	↓
PRS ID:		ok	**SAMPLE TECH CODE:**	UA	BP
LOCATION ID:	LLAO-4		**FIELD PREP:**	F	ok
LOCATION TYPE:	MON		**FIELD QC TYPE:**	REG	
PORT:	SINGLE COMPLETION	↓	**SAMPLE USAGE:**	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Oxidation-Reduction Potential NA MV pH NA SU

Specific Conductance NA uS/cm Temperature NA deg C Turbidity NA NTU

COLLECTED BY (PRINT) M. Stenlo

RELINQUISHED BY (Printed Name) Alex Hooke **(Signature)**	**Date/Time** 6/12/13 1210	**RECEIVED BY (Printed Name)** S. Sherwood **(Signature)** Sherri Sherwood	**Date/Time** 6/12/13 1210
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 05/29/2013

Data Validation Report for:

Chain Of Custody No. 2013-951

Data Validation Report

Chain Of Custody No. 2013-951

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
327622	EPA:120.1	1				
327622	EPA:150.1	1				
327622	EPA:160.1	1				
327622	EPA:245.2	1				
327622	EPA:300.0	1				
327622	EPA:310.1	1				
327622	EPA:350.1	1				
327622	EPA:351.2	1				
327622	EPA:353.2	1				
327622	EPA:365.4	1				
327622	EPA:900	1				
327622	EPA:901.1	1				
327622	EPA:905.0	1				
327622	HASL-300:AM-241	1				
327622	HASL-300:ISOPU	1				
327622	HASL-300:ISOU	1				
327622	SM:A2340B	1				
327622	SW-846:6010B	1				
327622	SW-846:6020	1				
327622	SW-846:6850	1				
327622	SW-846:8260B	1		1		
327622	SW-846:9060	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
327622	EPA:120.1	1311655	1311655	1							
327622	EPA:150.1	1308135	1308135	1							
327622	EPA:160.1	1308070	1308070	1					1		
327622	EPA:245.2	1311681	1311670	1					1	2	
327622	EPA:300.0	1307985	1307985	1					1		
327622	EPA:310.1	1310345	1310345	1					2	1	
327622	EPA:350.1	1308128	1308126	1					1	1	
327622	EPA:351.2	1308288	1308287	1					1	2	
327622	EPA:353.2	1308998	1308998	1					1		
327622	EPA:365.4	1308132	1308131	1					1	1	
327622	EPA:900	1308529	1308529	1					1	1	1
327622	EPA:901.1	1307967	1307967	1					1		
327622	EPA:905.0	1308549	1308549	1					1	1	
327622	HASL-300:AM-241	1307462	1307462	1					1		
327622	HASL-300:ISOPU	1307464	1307464	1					1		
327622	HASL-300:ISOU	1307467	1307467	1					1		
327622	SM:A2340B	1313406	1313406	1							
327622	SW-846:6010B	1308250	1308249	1					1	1	
327622	SW-846:6020	1308248	1308247	1					1	1	
327622	SW-846:6850	1308476	1308475	1					1	1	1
327622	SW-846:8260B	1310310	1310310	1		1			3		
327622	SW-846:9060	1309042	1309042	1					1		

Data Validation Report for:

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Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spikes	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
		1				1			
		1				1			
		1				1			
		1				2			
		1				1			
		2				1			
		1				1			
		1				2			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1							
		6							
		1				1			

2. Distribution Of Analytes In EDD.

Analytical Method	Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spikes	TICS
EPA:120.1	GENERAL CHEMISTRY	CALA-13-33431	1202901423	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202901425	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-13-34783	1202892561	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1202892559	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CALA-13-33435	1202892385	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202892380	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202892376	MB	1	0	0	0
EPA:245.2	INORGANIC	CALA-13-33431	327622002	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1202901487	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202901486	MB	1	0	0	0
EPA:245.2	INORGANIC	WST59-13-36938	1202901488	DUP	1	0	0	0
EPA:245.2	INORGANIC	WST59-13-36938	1202901489	MS	0	0	1	0
EPA:245.2	INORGANIC	WTLAP-13-31087	1202901491	DUP	1	0	0	0
EPA:245.2	INORGANIC	WTLAP-13-31087	1202901492	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-13-34785	1202892154	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202892156	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202892153	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CALA-13-33431	1202898295	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CALA-13-33431	1202898296	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202898292	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202898718	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202898291	MB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202898717	MB	2	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34781	1202892528	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34781	1202892530	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202892532	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202892527	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CALA-13-33423	327622001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34773	1202892934	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34773	1202892936	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34778	1202892935	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34778	1202892937	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202892938	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202892933	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-13-33431	1202894792	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202894796	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202894789	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CALA-13-33431	327622002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202892538	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202892537	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST35-13-31938	1202892539	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST35-13-31938	1202892540	MS	0	0	1	0
EPA:900	RAD	CALA-13-33423	327622001	REG	2	0	0	0
EPA:900	RAD	CAPU-13-34775	1202893585	DUP	2	0	0	0
EPA:900	RAD	CAPU-13-34775	1202893586	MS	0	0	2	0
EPA:900	RAD	CAPU-13-34775	1202893587	MSD	0	0	2	0

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EPA:900	RAD	LCS	1202893588	LCS	0	0	2	0
EPA:900	RAD	MB	1202893584	MB	2	0	0	0
EPA:901.1	RAD	CALA-13-33423	327622001	REG	5	0	0	0
EPA:901.1	RAD	CALA-13-33427	1202892111	DUP	5	0	0	0
EPA:901.1	RAD	LCS	1202892112	LCS	0	0	3	0
EPA:901.1	RAD	MB	1202892110	MB	5	0	0	0
EPA:905.0	RAD	CALA-13-33423	1202893648	DUP	1	0	0	0
EPA:905.0	RAD	CALA-13-33423	1202893649	MS	0	0	1	0
EPA:905.0	RAD	CALA-13-33423	327622001	REG	1	0	0	0
EPA:905.0	RAD	LCS	1202893650	LCS	0	0	1	0
EPA:905.0	RAD	MB	1202893647	MB	1	0	0	0
HASL-300:AM-241	RAD	CALA-13-33423	327622001	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPU-13-34777	1202890848	DUP	1	0	0	0
HASL-300:AM-241	RAD	LCS	1202890849	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1202890847	MB	1	0	0	0
HASL-300:ISOPU	RAD	CALA-13-33423	327622001	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-13-34777	1202890856	DUP	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1202890857	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1202890855	MB	2	0	0	0
HASL-300:ISOU	RAD	CALA-13-33423	327622001	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPU-13-34777	1202890864	DUP	3	0	0	0
HASL-300:ISOU	RAD	LCS	1202890865	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1202890863	MB	3	0	0	0
SM:A2340B	INORGANIC	CALA-13-33431	327622002	REG	1	0	0	0
SW-846:6010B	INORGANIC	CALA-13-33431	327622002	REG	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1202892845	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202892844	MB	17	0	0	0
SW-846:6010B	INORGANIC	WST35-13-31938	1202892846	DUP	17	0	0	0
SW-846:6010B	INORGANIC	WST35-13-31938	1202892847	MS	0	0	17	0
SW-846:6020	INORGANIC	CALA-13-33431	327622002	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1202892840	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202892839	MB	11	0	0	0
SW-846:6020	INORGANIC	WST35-13-31938	1202892841	DUP	11	0	0	0
SW-846:6020	INORGANIC	WST35-13-31938	1202892842	MS	0	0	11	0
SW-846:6850	LCMS/MS PERCHLORATE	CALA-13-33431	327622002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34783	1202893409	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34783	1202893410	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202893408	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202893407	MB	1	0	0	0
SW-846:8260B	VOC	CALA-13-33416	327622003	FTB	80	3	0	0
SW-846:8260B	VOC	CALA-13-33423	327622001	REG	80	3	0	0
SW-846:8260B	VOC	LCS	1202898218	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1202898219	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1202898220	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1202898221	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1202899758	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1202899759	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1202898208	MB	80	3	0	0
SW-846:8260B	VOC	MB	1202898209	MB	80	3	0	0
SW-846:8260B	VOC	MB	1202899757	MB	80	3	0	0
SW-846:9060	GENERAL CHEMISTRY	CALA-13-33423	327622001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-13-34775	1202894930	DUP	1	0	0	0

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SW-846:9060	GENERAL CHEMISTRY	LCS	1202894932	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1202894929	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Field Sample ID	Lab Sample ID	Type Of Blank	Analytical Method	Sample Matrix	Parameter Name	Lab Result	Lab Qualifier	Units	Lab Detection Limit
MB	1202892376	METHOD BLANK	EPA:160.1	W	Total Dissolved Solids	7.14	J	mg/L	14.3
MB	1202892844	METHOD BLANK	SW-846:6010B	W	Sodium	204	J	ug/L	300
MB	1202898291	METHOD BLANK	EPA:310.1	W	Alkalinity-CO3+HCO3	1.05		mg/L	1
MB	1202901486	METHOD BLANK	EPA:245.2	W	Mercury	-0.076	J	ug/L	0.2

Any samples affected by the presence of contaminants in blanks?

Field Sample ID	Blank Field Sample ID	Blank Lab Sample ID	Blank Type	Analytical Method	Parameter Name	Units	Blank Result	Sample Result	Lab Qualifier	Detect Limit	Detected
CALA-13-33431	MB	1202901486	METHOD BLANK	EPA:245.2	Mercury	ug/L	-0.076	0.2	U	0.2	N

6. Any surrogate recoveries outside the control limits?

No.

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

Field Sample ID	Matrix Spike ID	Matrix Spike Dup ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS % Recvry	MSD % Recvry	Upper Limit	Lower Limit
WST35-13-31938	1202892540		EPA:365.4	Total Phosphate as Phosphorus	1308131	6/18/2013	W	5660		139	62
CAPU-13-34775	1202893586	1202893587	EPA:900	Gross alpha	1308529	6/26/2013	W	94.2	109	125	75
WST35-13-31938	1202892847		SW-846:6010B	Aluminum	1308249	6/24/2013	W	-1.17		125	75
WST35-13-31938	1202892847		SW-846:6010B	Barium	1308249	6/24/2013	W	0.7		125	75
WST35-13-31938	1202892847		SW-846:6010B	Beryllium	1308249	6/24/2013	W	62.4		125	75
WST35-13-31938	1202892847		SW-846:6010B	Calcium	1308249	6/24/2013	W	-0.982		125	75
WST35-13-31938	1202892847		SW-846:6010B	Copper	1308249	6/24/2013	W	65.2		125	75
WST35-13-31938	1202892847		SW-846:6010B	Iron	1308249	6/24/2013	W	-0.446		125	75
WST35-13-31938	1202892847		SW-846:6010B	Magnesium	1308249	6/24/2013	W	-0.825		125	75
WST35-13-31938	1202892847		SW-846:6010B	Manganese	1308249	6/24/2013	W	44		125	75
WST35-13-31938	1202892847		SW-846:6010B	Potassium	1308249	6/25/2013	W	163		125	75
WST35-13-31938	1202892847		SW-846:6010B	Silicon Dioxide	1308249	6/25/2013	W	-282		125	75
WST35-13-31938	1202892847		SW-846:6010B	Sodium	1308249	6/25/2013	W	6600		125	75
WST35-13-31938	1202892847		SW-846:6010B	Strontium	1308249	6/24/2013	W	-0.0579		125	75
WST35-13-31938	1202892847		SW-846:6010B	Tin	1308249	6/24/2013	W	58.9		125	75
WST35-13-31938	1202892847		SW-846:6010B	Vanadium	1308249	6/24/2013	W	19.2		125	75
WST35-13-31938	1202892847		SW-846:6010B	Zinc	1308249	6/24/2013	W	72.2		125	75
WST35-13-31938	1202892842		SW-846:6020	Cadmium	1308247	6/26/2013	W	73.5		125	75
WST35-13-31938	1202892842		SW-846:6020	Chromium	1308247	6/25/2013	W	7.99		125	75
WST35-13-31938	1202892842		SW-846:6020	Lead	1308247	6/26/2013	W	30		125	75

Data Validation Report for:

Chain Of Custody No. 2013-951

Correction Factor (ND)	Correction Factor (J)	Use Factors
5		Y

Rejection Limit	RPD	RPD Limit
10		
10	14.9	2.13
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		
10		

WST35-13-31938	1202892842		SW-846:6020	Molybdenum	1308247	6/25/2013	W	69.8		125	75
WST35-13-31938	1202892842		SW-846:6020	Nickel	1308247	6/25/2013	W	134		125	75
WST35-13-31938	1202892842		SW-846:6020	Selenium	1308247	6/27/2013	W	-47.4		125	75

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 Coments.

None.

13. Display Flagged Data.

Location ID	Chain Of Custody No	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detected
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
LLAO-4	2013-951	CALA-13-33423	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N

Reason Code	Description
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualifiy the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
R5	Analyte is not detected because the amount reported is less than the MDC.
U_LAB	The analytical laboratory qualified the analyte as not detected.

14. Useable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total No. Of Records
CALA-13-33416	LLAO-4	FTB	SW-846:8260B	0	80
CALA-13-33423	LLAO-4	REG	EPA:351.2	0	1
CALA-13-33423	LLAO-4	REG	EPA:900	0	2

Data Validation Report for:

Chain Of Custody No. 2013-951

10
10
10

Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent Moisture	Analysis Lot ID	Validation Status Code	Use Flag
0.00862	pCi/L	0.00862	pCi/L	0.0437	0.00643	W	6/12/2013		1307462	VAL	Y
1.83	pCi/L	1.83	pCi/L	3.86	1.02	W	6/12/2013		1307967	VAL	Y
-1.47	pCi/L	-1.47	pCi/L	3.47	1.27	W	6/12/2013		1307967	VAL	Y
0.233	pCi/L	0.233	pCi/L	2.44	0.512	W	6/12/2013		1308529	VAL	Y
-3.35	pCi/L	-3.35	pCi/L	7.03	2.09	W	6/12/2013		1307967	VAL	Y
0.00253	pCi/L	0.00253	pCi/L	0.0237	0.0076	W	6/12/2013		1307464	VAL	Y
0.038	pCi/L	0.038	pCi/L	0.0499	0.0141	W	6/12/2013		1307464	VAL	Y
1.34	pCi/L	1.34	pCi/L	34.3	12.9	W	6/12/2013		1307967	VAL	Y
0.129	pCi/L	0.129	pCi/L	3.39	1.06	W	6/12/2013		1307967	VAL	Y
-0.0592	pCi/L	-0.0592	pCi/L	0.49	0.13	W	6/12/2013		1308549	VAL	Y
0.0178	pCi/L	0.0178	pCi/L	0.0617	0.0126	W	6/12/2013		1307467	VAL	Y

CALA-13-33423	LLAO-4	REG	EPA:901.1	0	5
CALA-13-33423	LLAO-4	REG	EPA:905.0	0	1
CALA-13-33423	LLAO-4	REG	HASL-300:AM-241	0	1
CALA-13-33423	LLAO-4	REG	HASL-300:ISOPU	0	2
CALA-13-33423	LLAO-4	REG	HASL-300:ISOU	0	3
CALA-13-33423	LLAO-4	REG	SW-846:8260B	0	80
CALA-13-33423	LLAO-4	REG	SW-846:9060	0	1
CALA-13-33431	LLAO-4	REG	EPA:120.1	0	1
CALA-13-33431	LLAO-4	REG	EPA:150.1	0	1
CALA-13-33431	LLAO-4	REG	EPA:160.1	0	1
CALA-13-33431	LLAO-4	REG	EPA:245.2	0	1
CALA-13-33431	LLAO-4	REG	EPA:300.0	0	4
CALA-13-33431	LLAO-4	REG	EPA:310.1	0	2
CALA-13-33431	LLAO-4	REG	EPA:350.1	0	1
CALA-13-33431	LLAO-4	REG	EPA:353.2	0	1
CALA-13-33431	LLAO-4	REG	EPA:365.4	0	1
CALA-13-33431	LLAO-4	REG	SM:A2340B	0	1
CALA-13-33431	LLAO-4	REG	SW-846:6010B	0	17
CALA-13-33431	LLAO-4	REG	SW-846:6020	0	11
CALA-13-33431	LLAO-4	REG	SW-846:6850	0	1

GEL Laboratories LLC

a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407

P 843.556.8171 F 843.766.1178

www.gel.com

July 11, 2013

Mr. Keith Greene
Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Re: LANL-WQH Water Samples
Work Order: 327622
SDG: 2013-951

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 14, 2013, and analyzed for GC/MS Volatile, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

for

Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2013-951
Enclosures

ARS International (63641-10)
LANL-WQH Water Samples
Work Order #: 327622
SDG: 2013-951

Table of Contents

Case Narrative

Case Narrative for
ARS International (63641-10)
LANL-WQH Water Samples
Workorder #: 327622
SDG # : 2013-951

July 11, 2013

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 14, 2013 for analysis. Please see attached email for discrepancies. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. The containers for Gross A/B were preserved prior to analysis. 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:

Laboratory ID	Client ID
327622001	CALA-13-33423
327622002	CALA-13-33431
327622003	CALA-13-33416

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: GC/MS Volatile, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

for
Valerie Davis
Project Manager

List of current GEL Certifications as of 11 July 2013

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP A2LA ISO 17025	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M−SC012
Nevada	SC000122011−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
Plant Material Permit	PDEP−12−00260
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235−13−8
Utah NELAP	SC000122013−8
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12
Wisconsin	999887790

Chain of Custody and Supporting Documentation

General Engineering Laboratories, Inc., Charleston, SC.
2040 Savage Rd
Charleston SC 29407

Chain of Custody/Analysis Request

327622

COC/Lab Request #: 2013-951

Page 1 of 1

Client Contact:

Lab Agreement # : 126310011

Project Number :

Site Name: Los Alamos National Laboratory

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Day - ☐

14 Day - ☐

21 Day - ☐

28 Day - ☒

Rad Screening Info: Yes, Below Background

Lab Reporting Limit Type:

Special Instructions:

Field Sample ID	Sample Date	Sample Time	Sample Matrix	WSP-8260B-VOA	WSP-CL04	WSP-GENINORG	WSP-GrossA/B	WSP-Met+B+SN+SR+U	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC
CALA-13-33423	Jun 12 2013	10:53	W	2			1			1	1
CALA-13-33431	Jun 12 2013	10:53	W		1	1		1	1		
CALA-13-33416	Jun 12 2013	10:53	W	2							

Special Instructions:

Relinquished by: Steven Sherwood	Print Name: S. Sherwood	Date/Time: 6/13/13 3pm	Received by: P. Kent	Print Name: Patricia Dent	Date/Time: 6.14.13 0850
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: LANL			**SDG/AR/COC/Work Order: 2013-951**
Received By: Patricia Dent			**Date Received:JUN 14, 2013**
Suspected Hazard Information	**Yes**	**No**	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		X	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): **0CPM**
Classified Radioactive II or III by RSO?		X	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		X	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		X	If yes, samples are to be segregeated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		X	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius **2,3C**
2a	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): **61524649**
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?			X	Sample ID's, containers affected and observed pH: **CALA-13-33423 for Gross A/B** If Preservation added, Lot#: **NX 0409-72**
6	VOA vials free of headspace (defined as < 6mm bubble)?	X			Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11	Number of containers received match number indicated on COC?			X	Sample ID's affected: **CALA-13-33416 the lab received 1 8260b container chain indicates 2.**
12	Are sample containers identifiable as GEL provided?			X	**Clients**
13	COC form is properly signed in relinquished/received sections?	X			
14	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other **5462 9833 0940 2C 5462 9833 0939 3C**

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials QP Date 6-17-13 Page 1 of 1

Subject: Sample receipt issues from 06/14/13
From: Pat Dent <Pat.Dent@gel.com>
Date: 6/14/2013 6:10 PM
To: "Keith R. Greene" <kgreene@lanl.gov>
CC: "team.davis" <team.davis@gel.com>

Good Evening all listed below are today's issues

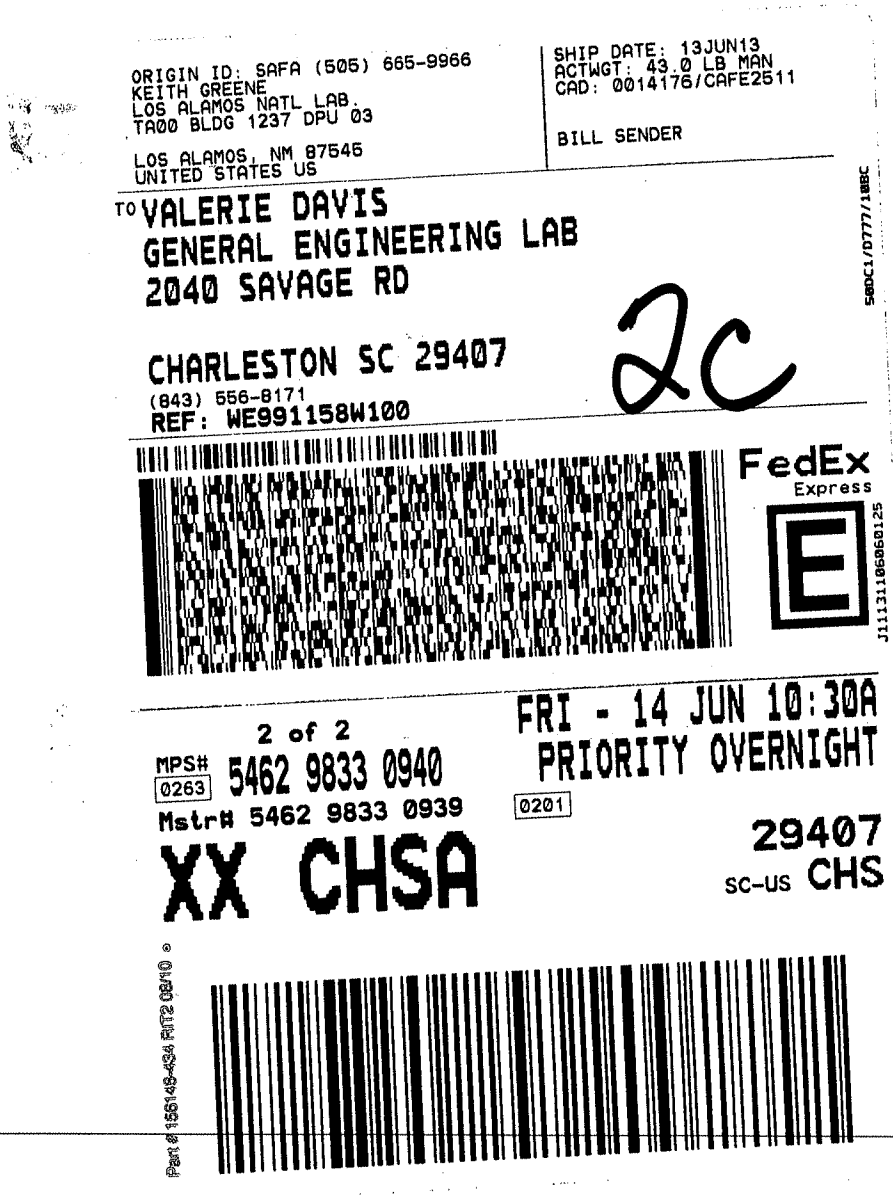
Containers received for Gross A/B was preserved prior to analysis

RN#2013-951
CALA-13-33416 the lab received 1 container for 8260b the chain indicates 2.

RN#2013-953
WST35-13-31938 all containers received was unpreserve, please advise.
The chain indicates 6 containers the lab received 5.

Thanks!!

--
Patricia Dent
Project Manager Assistant
GEL Laboratories, LLC
2040 Savage Rd.
Charleston, S.C. 29407
Main: 843-556-8171 Ext 4264
Fax: 843-766-1178
Email: pad@gel.com
Web: www.gel.com



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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 13JUN13
ACTWGT: 43.0 LB MAN
CAD: 0014176/CAFE2511

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: WE991158W100

2c

FedEx Express

2 of 2
MPS# 5462 9833 0940
Mstr# 5462 9833 0939

FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT

0263
0201

XX CHSA

29407
SC-US CHS

NPDES

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 13JUN13
ACTWGT: 58.0 LB MAN
CAD: 0014176/CAFE2511

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: WE991158W100

3c

5BDC1/D777/10BC

FedEx Express

J111311860691125

1 of 2

TRK# 0201 5462 9833 0939

FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT

MASTER

XX CHSA

29407
SC-US CHS

Part # 158148-434 RIT2 08/10

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

ChemStation Case Narrative
ARS International (ARSL)
SDG 2013-951

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 8260B DOE-AL
Analytical Batch Number:	1310310

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
327622001	CALA-13-33423
327622003	CALA-13-33416
1202898208	Method Blank (MB)
1202898212	327704004(CAWA-13-33604) Post Spike (PS)
1202898213	327704004(CAWA-13-33604) Post Spike (PS)
1202898216	327704004(CAWA-13-33604) Post Spike Duplicate (PSD)
1202898217	327704004(CAWA-13-33604) Post Spike Duplicate (PSD)
1202898218	Laboratory Control Sample (LCS)
1202898219	Laboratory Control Sample (LCS)
1202899757	Method Blank (MB)
1202899758	Laboratory Control Sample (LCS)
1202899759	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 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-038 REV# 19.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP) section 19.1.2. False positive analytes are designated on the quantitation report with a ’d’ qualifier.

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
At the request of the client, linear curve fits, for target analytes that did not meet the x-intercept criteria of less than or equal to 3 times the MDL and had %RSDs less than 60%, were set to use the average response factor to quantitate data in this 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 327704004 (CAWA-13-33604) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement
The spike 1202898213 (CAWA-13-33604) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Matrix Spike Duplicate (PSD) Recovery Statement
The spike duplicate 1202898217 (CAWA-13-33604) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Relative Percent Difference (RPD) Statement
The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance
The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information

Holding Time Specifications
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. All samples in this SDG met the specified holding time.

Sample Preservation and Integrity
All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions
The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis
Re-analyses were not required for samples in this SDG.

Miscellaneous Information

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.

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1199514.

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 this sample delivery group/work order. Please note that non-requested target analytes that are reported on the quantitation reports will be present on the Form I. These detected analytes are included in the calibrated method and as a result will be reported on the Sample Data Summary (Form I) or Certificate of Analysis (C of A). TIC data, if requested, are included on the Sample Data Summary (Form I) and are also 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.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA9.I	Agilent 6890/5973 GC/MS w/ OI Eclipse/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

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

ARSL001 ARS International (63641-10)

Client SDG: 2013-951 GEL Work Order: 327622

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

E Concentration of the target analyte exceeds the instrument calibration range

U Analyte was analyzed for, but not detected above the MDL, MDA, 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: Erin Haubert **Name: Erin Haubert**

Date: 08 JUL 2013 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622001**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33423**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 11:57**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 11:57**				
Data File:	**062513V9\9S213.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	0.300	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	2.00	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	2.20	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	3.00	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:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622001**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33423**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 11:57**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 11:57**				
Data File:	**062513V9\9S213.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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	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	1.50	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:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622001**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33423**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 11:57**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 11:57**				
Data File:	**062513V9\9S213.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	49.2	50.0	ug/L	98.5	(78%-124%)
Bromofluorobenzene	46.6	50.0	ug/L	93.2	(80%-120%)
Toluene-d8	50.0	50.0	ug/L	100	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown hydrocarbon	4.286	30.6	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622003**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33416**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 10:38**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 10:38**				
Data File:	**062513V9\9S210.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	0.300	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	2.00	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	2.20	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	3.00	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:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622003**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33416**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 10:38**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 10:38**				
Data File:	**062513V9\9S210.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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	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	1.50	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:	**2013-951**	**Date Collected:**	**06/12/2013 10:53**	**Matrix:**	**W**
Lab Sample ID:	**327622003**	**Date Received:**	**06/14/2013 08:50**		
		Client:	**ARSL001**	**Project:**	**ESHL00210**
Client ID:	**CALA-13-33416**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 10:38**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 10:38**				
Data File:	**062513V9\9S210.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	53.0	50.0	ug/L	106	(78%-124%)
Bromofluorobenzene	47.4	50.0	ug/L	94.9	(80%-120%)
Toluene-d8	49.3	50.0	ug/L	98.7	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown hydrocarbon	4.197	10.2	ug/L	0	J

Quality Control Summary

Volatile

Surrogate Recovery Report

SDG Number: 2013-951

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1202898218	LCS for batch 1310310	94	96	93
1202898219	LCS for batch 1310310	99	98	101
1202898208	MB for batch 1310310	95	99	97
327622003	CALA-13-33416	106	99	95
327622001	CALA-13-33423	98	100	93
1202899758	LCS for batch 1310310	99	99	102
1202899759	LCS for batch 1310310	97	99	104
1202899757	MB for batch 1310310	99	99	100
1202898212	CAWA-13-33604PS	103	103	103
1202898216	CAWA-13-33604PSD	98	101	103
1202898213	CAWA-13-33604PS	103	100	102
1202898217	CAWA-13-33604PSD	102	100	100

Surrogate			Acceptance Limits
DCED4	=	1,2-Dichloroethane-d4	(78%-124%)
TOL	=	Toluene-d8	(80%-120%)
BFB	=	Bromofluorobenzene	(80%-120%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike
Client ID: CAWA-13-33604PS **Matrix:** W
Lab Sample ID: 1202898212
Instrument: VOA9.I **Analysis Date:** 06/27/2013 18:47 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

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	103	103	56-134
75-05-8	PS	Acetonitrile	1250	0.00	U	1280	102	60-133
67-64-1	PS	Acetone	250	3.14	J	224	88	30-143
74-88-4	PS	Iodomethane	250	0.00	U	259	104	69-147
75-15-0	PS	Carbon disulfide	250	0.00	U	298	119	65-153
108-05-4	PS	Vinyl acetate	250	0.00	U	289	116	50-143
78-93-3	PS	2-Butanone	250	0.00	U	247	99	30-140
108-10-1	PS	4-Methyl-2-pentanone	250	0.00	U	255	102	68-136
591-78-6	PS	2-Hexanone	250	0.00	U	249	99	31-132
75-71-8	PS	Dichlorodifluoromethane	50.0	0.00	U	61.6	123	36-123
74-87-3	PS	Chloromethane	50.0	0.00	U	59.9	120	47-134
75-01-4	PS	Vinyl chloride	50.0	0.00	U	55.4	111	49-129
74-83-9	PS	Bromomethane	50.0	0.00	U	52.1	104	56-127
75-00-3	PS	Chloroethane	50.0	0.00	U	54.2	108	67-122
75-69-4	PS	Trichlorofluoromethane	50.0	0.00	U	56.1	112	60-123
60-29-7	PS	Ethyl ether	50.0	0.00	U	50.1	100	69-121
75-35-4	PS	1,1-Dichloroethylene	50.0	0.00	U	57.2	114	67-132
75-09-2	PS	Methylene chloride	50.0	0.00	U	48.6	97	56-135
1634-04-4	PS	tert-Butyl methyl ether	50.0	0.00	U	49.5	99	73-126
156-60-5	PS	trans-1,2-Dichloroethylene	50.0	0.00	U	55.5	111	69-128
75-34-3	PS	1,1-Dichloroethane	50.0	0.00	U	54.2	108	75-124
156-59-2	PS	cis-1,2-Dichloroethylene	50.0	0.00	U	53.6	107	52-147

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike
Client ID: CAWA-13-33604PS **Matrix:** W
Lab Sample ID: 1202898212
Instrument: VOA9.I **Analysis Date:** 06/27/2013 18:47 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

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	56.2	112	67-143
67-66-3	PS	Chloroform	50.0	0.00	U	52.5	105	75-125
74-97-5	PS	Bromochloromethane	50.0	0.00	U	52.4	105	80-120
71-55-6	PS	1,1,1-Trichloroethane	50.0	0.00	U	58.1	116	69-140
563-58-6	PS	1,1-Dichloropropene	50.0	0.00	U	55.1	110	71-130
56-23-5	PS	Carbon tetrachloride	50.0	0.00	U	60.4	121	69-142
107-06-2	PS	1,2-Dichloroethane	50.0	0.00	U	50.4	101	72-126
71-43-2	PS	Benzene	50.0	0.00	U	50.5	101	73-119
79-01-6	PS	Trichloroethylene	50.0	0.00	U	53.5	107	54-147
78-87-5	PS	1,2-Dichloropropane	50.0	0.00	U	51.5	103	78-123
75-27-4	PS	Bromodichloromethane	50.0	0.00	U	55.2	110	76-131
74-95-3	PS	Dibromomethane	50.0	0.00	U	52.4	105	79-120
10061-01-5	PS	cis-1,3-Dichloropropylene	50.0	0.00	U	54.8	110	72-134
10061-02-6	PS	trans-1,3-Dichloropropylene	50.0	0.00	U	53.0	106	72-133
79-00-5	PS	1,1,2-Trichloroethane	50.0	0.00	U	48.0	96	74-120
142-28-9	PS	1,3-Dichloropropane	50.0	0.00	U	47.8	96	73-121
127-18-4	PS	Tetrachloroethylene	50.0	0.00	U	52.5	105	54-139
124-48-1	PS	Dibromochloromethane	50.0	0.00	U	54.7	109	74-128
106-93-4	PS	1,2-Dibromoethane	50.0	0.00	U	50.0	100	80-120
108-90-7	PS	Chlorobenzene	50.0	0.00	U	48.7	97	73-119
100-41-4	PS	Ethylbenzene	50.0	0.00	U	50.8	102	66-125
95-47-6	PS	o-Xylene	50.0	0.00	U	51.6	103	68-126

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike
Client ID: CAWA-13-33604PS **Matrix:** W
Lab Sample ID: 1202898212
Instrument: VOA9.I **Analysis Date:** 06/27/2013 18:47 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	PS	Styrene	50.0	0.00	U	53.0	106	57-138
75-25-2	PS	Bromoform	50.0	0.00	U	57.7	115	66-129
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	U	48.7	97	44-146
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	U	48.1	96	68-129
108-86-1	PS	Bromobenzene	50.0	0.00	U	47.8	96	70-122
103-65-1	PS	n-Propylbenzene	50.0	0.00	U	49.9	100	61-131
95-49-8	PS	2-Chlorotoluene	50.0	0.00	U	48.6	97	66-126
98-82-8	PS	Isopropylbenzene	50.0	0.00	U	52.6	105	65-130
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	U	50.6	101	58-134
106-43-4	PS	4-Chlorotoluene	50.0	0.00	U	49.3	99	63-125
98-06-6	PS	tert-Butylbenzene	50.0	0.00	U	52.5	105	66-129
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	U	50.8	102	60-131
135-98-8	PS	sec-Butylbenzene	50.0	0.00	U	53.3	107	62-130
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	U	52.6	105	62-132
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	U	48.9	98	66-121
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	U	49.0	98	65-119
104-51-8	PS	n-Butylbenzene	50.0	0.00	U	54.0	108	55-134
96-12-8	PS	1,2-Dibromo-3-chloropropane	50.0	0.00	U	60.2	120	58-137
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	U	52.8	106	49-139
91-20-3	PS	Naphthalene	50.0	0.00	U	51.3	103	46-145
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	U	51.1	102	54-134
120-82-1	PS	1,2,4-Trichlorobenzene	50.0	0.00	U	49.9	100	55-128

Quality Control Summary
Spike Recovery Report

SDG Number: **2013-951**
Sample Type: **Post Spike**
Client ID: **CAWA-13-33604PS**
Matrix: **W**
Lab Sample ID: **1202898212**
Instrument: **VOA9.I**
Analysis Date: **06/27/2013 18:47**
Dilution: **1**
Analyst: **RXY1**
Purge Vol: **5 mL**
Batch ID: **1310310**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	U	54.1	108	79-128
95-50-1	PS	1,2-Dichlorobenzene	50.0	0.00	U	48.0	96	68-121
108-88-3	PS	Toluene	50.0	8.27		56.5	97	62-126
71-36-3	PS	n-Butyl alcohol	5000	0.00	U	5600	112	53-150

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike Duplicate
Client ID: CAWA-13-33604PSD **Matrix:** W
Lab Sample ID: 1202898216
Instrument: VOA9.I **Analysis Date:** 06/27/2013 19:14 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

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	96.0	96	56-134	8	0-20
75-05-8	PSD	Acetonitrile	1250	0.00	U	1120	89	60-133	13	0-20
67-64-1	PSD	Acetone	250	3.14	J	192	76	30-143	16	0-20
74-88-4	PSD	Iodomethane	250	0.00	U	234	93	69-147	10	0-20
75-15-0	PSD	Carbon disulfide	250	0.00	U	263	105	65-153	13	0-20
108-05-4	PSD	Vinyl acetate	250	0.00	U	259	104	50-143	11	0-20
78-93-3	PSD	2-Butanone	250	0.00	U	215	86	30-140	14	0-20
108-10-1	PSD	4-Methyl-2-pentanone	250	0.00	U	233	93	68-136	9	0-20
591-78-6	PSD	2-Hexanone	250	0.00	U	223	89	31-132	11	0-20
75-71-8	PSD	Dichlorodifluoromethane	50.0	0.00	U	55.2	110	36-123	11	0-20
74-87-3	PSD	Chloromethane	50.0	0.00	U	54.0	108	47-134	10	0-20
75-01-4	PSD	Vinyl chloride	50.0	0.00	U	51.1	102	49-129	8	0-20
74-83-9	PSD	Bromomethane	50.0	0.00	U	47.7	95	56-127	9	0-20
75-00-3	PSD	Chloroethane	50.0	0.00	U	48.5	97	67-122	11	0-20
75-69-4	PSD	Trichlorofluoromethane	50.0	0.00	U	50.1	100	60-123	11	0-20
60-29-7	PSD	Ethyl ether	50.0	0.00	U	45.6	91	69-121	10	0-20
75-35-4	PSD	1,1-Dichloroethylene	50.0	0.00	U	50.6	101	67-132	12	0-20
75-09-2	PSD	Methylene chloride	50.0	0.00	U	45.5	91	56-135	7	0-20
1634-04-4	PSD	tert-Butyl methyl ether	50.0	0.00	U	46.2	92	73-126	7	0-20
156-60-5	PSD	trans-1,2-Dichloroethylene	50.0	0.00	U	49.4	99	69-128	12	0-20
75-34-3	PSD	1,1-Dichloroethane	50.0	0.00	U	49.3	99	75-124	9	0-20
156-59-2	PSD	cis-1,2-Dichloroethylene	50.0	0.00	U	49.0	98	52-147	9	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike Duplicate

Client ID: CAWA-13-33604PSD **Matrix:** W

Lab Sample ID: 1202898216

Instrument: VOA9.I **Analysis Date:** 06/27/2013 19:14 **Dilution:** 1

Analyst: RXY1

Purge Vol: 5 mL **Batch ID:** 1310310

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	50.8	102	67-143	10	0-20
67-66-3	PSD	Chloroform	50.0	0.00	U	48.3	97	75-125	8	0-20
74-97-5	PSD	Bromochloromethane	50.0	0.00	U	47.5	95	80-120	10	0-20
71-55-6	PSD	1,1,1-Trichloroethane	50.0	0.00	U	51.9	104	69-140	11	0-20
563-58-6	PSD	1,1-Dichloropropene	50.0	0.00	U	49.6	99	71-130	10	0-20
56-23-5	PSD	Carbon tetrachloride	50.0	0.00	U	53.8	108	69-142	12	0-20
107-06-2	PSD	1,2-Dichloroethane	50.0	0.00	U	47.0	94	72-126	7	0-20
71-43-2	PSD	Benzene	50.0	0.00	U	46.4	93	73-119	9	0-20
79-01-6	PSD	Trichloroethylene	50.0	0.00	U	48.5	97	54-147	10	0-20
78-87-5	PSD	1,2-Dichloropropane	50.0	0.00	U	47.0	94	78-123	9	0-20
75-27-4	PSD	Bromodichloromethane	50.0	0.00	U	50.8	102	76-131	8	0-20
74-95-3	PSD	Dibromomethane	50.0	0.00	U	46.6	93	79-120	12	0-20
10061-01-5	PSD	cis-1,3-Dichloropropylene	50.0	0.00	U	49.9	100	72-134	9	0-20
10061-02-6	PSD	trans-1,3-Dichloropropylene	50.0	0.00	U	50.6	101	72-133	5	0-20
79-00-5	PSD	1,1,2-Trichloroethane	50.0	0.00	U	46.3	93	74-120	4	0-20
142-28-9	PSD	1,3-Dichloropropane	50.0	0.00	U	45.8	92	73-121	4	0-20
127-18-4	PSD	Tetrachloroethylene	50.0	0.00	U	49.3	99	54-139	6	0-20
124-48-1	PSD	Dibromochloromethane	50.0	0.00	U	52.1	104	74-128	5	0-20
106-93-4	PSD	1,2-Dibromoethane	50.0	0.00	U	47.2	94	80-120	6	0-20
108-90-7	PSD	Chlorobenzene	50.0	0.00	U	46.2	92	73-119	5	0-20
100-41-4	PSD	Ethylbenzene	50.0	0.00	U	46.9	94	66-125	8	0-20
95-47-6	PSD	o-Xylene	50.0	0.00	U	47.7	95	68-126	8	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike Duplicate
Client ID: CAWA-13-33604PSD **Matrix:** W
Lab Sample ID: 1202898216
Instrument: VOA9.I **Analysis Date:** 06/27/2013 19:14 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
100-42-5	PSD	Styrene	50.0	0.00	U	49.5	99	57-138	7	0-20
75-25-2	PSD	Bromoform	50.0	0.00	U	53.6	107	66-129	7	0-20
79-34-5	PSD	1,1,2,2-Tetrachloroethane	50.0	0.00	U	45.3	91	44-146	7	0-20
96-18-4	PSD	1,2,3-Trichloropropane	50.0	0.00	U	45.3	91	68-129	6	0-20
108-86-1	PSD	Bromobenzene	50.0	0.00	U	46.0	92	70-122	4	0-20
103-65-1	PSD	n-Propylbenzene	50.0	0.00	U	46.7	93	61-131	7	0-20
95-49-8	PSD	2-Chlorotoluene	50.0	0.00	U	46.7	93	66-126	4	0-20
98-82-8	PSD	Isopropylbenzene	50.0	0.00	U	49.1	98	65-130	7	0-20
108-67-8	PSD	1,3,5-Trimethylbenzene	50.0	0.00	U	48.5	97	58-134	4	0-20
106-43-4	PSD	4-Chlorotoluene	50.0	0.00	U	47.1	94	63-125	5	0-20
98-06-6	PSD	tert-Butylbenzene	50.0	0.00	U	50.8	102	66-129	3	0-20
95-63-6	PSD	1,2,4-Trimethylbenzene	50.0	0.00	U	48.6	97	60-131	4	0-20
135-98-8	PSD	sec-Butylbenzene	50.0	0.00	U	50.2	100	62-130	6	0-20
99-87-6	PSD	4-Isopropyltoluene	50.0	0.00	U	49.6	99	62-132	6	0-20
541-73-1	PSD	1,3-Dichlorobenzene	50.0	0.00	U	46.7	93	66-121	5	0-20
106-46-7	PSD	1,4-Dichlorobenzene	50.0	0.00	U	46.8	94	65-119	5	0-20
104-51-8	PSD	n-Butylbenzene	50.0	0.00	U	50.3	101	55-134	7	0-20
96-12-8	PSD	1,2-Dibromo-3-chloropropane	50.0	0.00	U	57.6	115	58-137	4	0-20
87-68-3	PSD	Hexachlorobutadiene	50.0	0.00	U	51.4	103	49-139	3	0-20
91-20-3	PSD	Naphthalene	50.0	0.00	U	51.0	102	46-145	1	0-20
87-61-6	PSD	1,2,3-Trichlorobenzene	50.0	0.00	U	50.1	100	54-134	2	0-20
120-82-1	PSD	1,2,4-Trichlorobenzene	50.0	0.00	U	49.7	99	55-128	0	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike Duplicate
Client ID: CAWA-13-33604PSD **Matrix:** W
Lab Sample ID: 1202898216
Instrument: VOA9.I **Analysis Date:** 06/27/2013 19:14 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
630-20-6	PSD	1,1,1,2-Tetrachloroethane	50.0	0.00	U	52.1	104	79-128	4	0-20
95-50-1	PSD	1,2-Dichlorobenzene	50.0	0.00	U	47.3	95	68-121	2	0-20
108-88-3	PSD	Toluene	50.0	8.27		53.9	91	62-126	5	0-20
71-36-3	PSD	n-Butyl alcohol	5000	0.00	U	4940	99	53-150	13	0-20

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike
Client ID: CAWA-13-33604PS **Matrix:** W
Lab Sample ID: 1202898213
Instrument: VOA9.I **Analysis Date:** 06/27/2013 20:36 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

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	0.00	0 *	30-167
76-13-1	PS	Trichlorotrifluoroethane	250	0.00	U	259	104	58-169
107-05-1	PS	Allyl chloride	250	0.00	U	235	94	61-136
107-13-1	PS	Acrylonitrile	250	0.00	U	246	98	65-135
107-12-0	PS	Propionitrile	250	0.00	U	251	100	66-141
126-98-7	PS	Methacrylonitrile	250	0.00	U	244	98	63-141
80-62-6	PS	Methyl methacrylate	250	0.00	U	252	101	70-130
97-63-2	PS	Ethyl methacrylate	250	0.00	U	268	107	73-132
78-83-1	PS	Isobutyl alcohol	2500	0.00	U	2500	100	59-146
126-99-8	PS	2-Chloro-1,3-butadiene	50.0	0.00	U	43.9	88	39-130

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Post Spike Duplicate
Client ID: CAWA-13-33604PSD **Matrix:** W
Lab Sample ID: 1202898217
Instrument: VOA9.I **Analysis Date:** 06/27/2013 21:04 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD	Acrolein	250	0.00	U	0.00	0 *	30-167	0	0-20
76-13-1	PSD	Trichlorotrifluoroethane	250	0.00	U	254	102	58-169	2	0-20
107-05-1	PSD	Allyl chloride	250	0.00	U	229	92	61-136	2	0-20
107-13-1	PSD	Acrylonitrile	250	0.00	U	222	89	65-135	10	0-20
107-12-0	PSD	Propionitrile	250	0.00	U	224	90	66-141	11	0-20
126-98-7	PSD	Methacrylonitrile	250	0.00	U	221	88	63-141	10	0-20
80-62-6	PSD	Methyl methacrylate	250	0.00	U	228	91	70-130	10	0-20
97-63-2	PSD	Ethyl methacrylate	250	0.00	U	241	96	73-132	11	0-20
78-83-1	PSD	Isobutyl alcohol	2500	0.00	U	2120	85	59-146	17	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	50.0	0.00	U	43.0	86	39-130	2	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1310310
Matrix: GROUND WATER
Lab Sample ID: 1202898218
Instrument: VOA9.I
Analysis Date: 06/25/2013 07:27
Dilution: 1
Analyst: RXY1
Purge Vol: 5 mL
Batch ID: 1310310

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	104	104	79-120
75-05-8	LCS	Acetonitrile	1250	0.0	1200	96	64-127
67-64-1	LCS	Acetone	250	0.0	278	111	36-163
74-88-4	LCS	Iodomethane	250	0.0	269	107	80-134
75-15-0	LCS	Carbon disulfide	250	0.0	278	111	80-143
108-05-4	LCS	Vinyl acetate	250	0.0	309	123	75-144
78-93-3	LCS	2-Butanone	250	0.0	270	108	46-158
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	240	96	76-131
591-78-6	LCS	2-Hexanone	250	0.0	246	99	53-158
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	37.1	74	39-124
74-87-3	LCS	Chloromethane	50.0	0.0	41.8	84	57-126
75-01-4	LCS	Vinyl chloride	50.0	0.0	43.3	87	62-121
74-83-9	LCS	Bromomethane	50.0	0.0	43.1	86	68-120
75-00-3	LCS	Chloroethane	50.0	0.0	46.0	92	73-120
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	49.8	100	65-123
60-29-7	LCS	Ethyl ether	50.0	0.0	53.3	107	74-120
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	52.0	104	76-127
75-09-2	LCS	Methylene chloride	50.0	0.0	47.5	95	72-121
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	49.9	100	76-123
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	52.7	105	77-123
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	52.2	104	79-120
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	52.5	105	80-122

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1310310
Matrix: GROUND WATER
Lab Sample ID: 1202898218
Instrument: VOA9.I
Analysis Date: 06/25/2013 07:27
Dilution: 1
Analyst: RXY1
Purge Vol: 5 mL
Batch ID: 1310310

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	56.0	112	76-145
67-66-3	LCS	Chloroform	50.0	0.0	51.2	102	80-120
74-97-5	LCS	Bromochloromethane	50.0	0.0	51.8	104	83-120
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	54.2	108	80-133
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	52.5	105	80-127
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	56.7	113	77-139
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	50.2	100	75-121
71-43-2	LCS	Benzene	50.0	0.0	50.1	100	79-120
79-01-6	LCS	Trichloroethylene	50.0	0.0	52.5	105	80-121
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	51.0	102	80-120
75-27-4	LCS	Bromodichloromethane	50.0	0.0	55.7	111	80-127
74-95-3	LCS	Dibromomethane	50.0	0.0	52.2	104	80-120
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	56.0	112	80-127
108-88-3	LCS	Toluene	50.0	0.0	50.1	100	77-120
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	54.6	109	80-128
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	49.5	99	79-120
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	47.6	95	77-120
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	51.9	104	77-125
124-48-1	LCS	Dibromochloromethane	50.0	0.0	57.3	115	77-126
106-93-4	LCS	1,2-Dibromoethane	50.0	0.0	50.6	101	80-120
108-90-7	LCS	Chlorobenzene	50.0	0.0	49.7	99	80-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	50.4	101	78-120

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1310310
Matrix: GROUND WATER
Lab Sample ID: 1202898218
Instrument: VOA9.I
Analysis Date: 06/25/2013 07:27
Dilution: 1
Analyst: RXY1
Purge Vol: 5 mL
Batch ID: 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS	o-Xylene	50.0	0.0	52.1	104	80-120
100-42-5	LCS	Styrene	50.0	0.0	53.7	107	80-121
75-25-2	LCS	Bromoform	50.0	0.0	56.7	113	72-125
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	48.2	96	73-120
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	47.5	95	74-121
108-86-1	LCS	Bromobenzene	50.0	0.0	48.1	96	79-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	49.8	100	75-125
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	48.7	97	77-121
98-82-8	LCS	Isopropylbenzene	50.0	0.0	50.8	102	76-125
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	50.2	100	77-123
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	48.6	97	75-120
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	51.3	103	79-123
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	51.0	102	77-121
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	51.5	103	76-124
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	52.3	105	79-125
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	49.8	100	78-120
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	49.9	100	77-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	52.3	105	75-127
96-12-8	LCS	1,2-Dibromo-3-chloropropane	50.0	0.0	59.1	118	69-128
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	51.1	102	75-128
91-20-3	LCS	Naphthalene	50.0	0.0	51.6	103	71-125
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	53.2	106	73-125

Quality Control Summary
Spike Recovery Report

SDG Number: **2013-951**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1310310**
Matrix: **GROUND WATER**
Lab Sample ID: **1202898218**
Instrument: **VOA9.I**
Analysis Date: **06/25/2013 07:27**
Dilution: **1**
Analyst: **RXY1**
Purge Vol: **5 mL**
Batch ID: **1310310**

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	53.5	107	75-123
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	55.9	112	80-124
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	48.6	97	79-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	5150	103	66-138

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 1310310 **Matrix:** GROUND WATER

Lab Sample ID: 1202898219

Instrument: VOA9.I **Analysis Date:** 06/25/2013 08:22 **Dilution:** 1

Analyst: RXY1

Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS	Acrolein	250	0.0	207	83	28-152
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	274	109	65-157
107-05-1	LCS	Allyl chloride	250	0.0	245	98	60-135
107-13-1	LCS	Acrylonitrile	250	0.0	235	94	64-131
107-12-0	LCS	Propionitrile	250	0.0	234	94	67-135
126-98-7	LCS	Methacrylonitrile	250	0.0	234	94	64-132
80-62-6	LCS	Methyl methacrylate	250	0.0	241	96	66-129
97-63-2	LCS	Ethyl methacrylate	250	0.0	257	103	66-132
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2310	92	60-136
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	44.5	89	45-159

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1310310
Matrix: WATER
Lab Sample ID: 1202899758
Instrument: VOA9.I
Analysis Date: 06/27/2013 10:07
Dilution: 1
Analyst: RXY1
Purge Vol: 5 mL
Batch ID: 1310310

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	98.0	98	79-120
75-05-8	LCS	Acetonitrile	1250	0.0	1090	87	64-127
67-64-1	LCS	Acetone	250	0.0	211	84	36-163
74-88-4	LCS	Iodomethane	250	0.0	231	92	80-134
75-15-0	LCS	Carbon disulfide	250	0.0	261	104	80-143
108-05-4	LCS	Vinyl acetate	250	0.0	282	113	75-144
78-93-3	LCS	2-Butanone	250	0.0	222	89	46-158
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	234	93	76-131
591-78-6	LCS	2-Hexanone	250	0.0	215	86	53-158
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	55.2	110	39-124
74-87-3	LCS	Chloromethane	50.0	0.0	51.5	103	57-126
75-01-4	LCS	Vinyl chloride	50.0	0.0	49.7	99	62-121
74-83-9	LCS	Bromomethane	50.0	0.0	46.6	93	68-120
75-00-3	LCS	Chloroethane	50.0	0.0	47.8	96	73-120
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	50.6	101	65-123
60-29-7	LCS	Ethyl ether	50.0	0.0	44.1	88	74-120
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	51.0	102	76-127
75-09-2	LCS	Methylene chloride	50.0	0.0	43.7	87	72-121
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	45.7	91	76-123
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	49.6	99	77-123
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	48.2	96	79-120
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	48.4	97	80-122

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951
Sample Type: Laboratory Control Sample
Client ID: LCS for batch 1310310
Matrix: WATER
Lab Sample ID: 1202899758
Instrument: VOA9.I
Analysis Date: 06/27/2013 10:07
Dilution: 1
Analyst: RXY1
Purge Vol: 5 mL
Batch ID: 1310310

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	53.6	107	76-145
67-66-3	LCS	Chloroform	50.0	0.0	48.0	96	80-120
74-97-5	LCS	Bromochloromethane	50.0	0.0	46.8	94	83-120
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	52.8	106	80-133
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	51.1	102	80-127
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	54.9	110	77-139
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	46.8	94	75-121
71-43-2	LCS	Benzene	50.0	0.0	46.6	93	79-120
79-01-6	LCS	Trichloroethylene	50.0	0.0	49.8	100	80-121
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	47.2	94	80-120
75-27-4	LCS	Bromodichloromethane	50.0	0.0	51.6	103	80-127
74-95-3	LCS	Dibromomethane	50.0	0.0	47.6	95	80-120
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	51.6	103	80-127
108-88-3	LCS	Toluene	50.0	0.0	47.4	95	77-120
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	51.5	103	80-128
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	44.8	90	79-120
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	44.0	88	77-120
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	50.7	101	77-125
124-48-1	LCS	Dibromochloromethane	50.0	0.0	51.5	103	77-126
106-93-4	LCS	1,2-Dibromoethane	50.0	0.0	47.6	95	80-120
108-90-7	LCS	Chlorobenzene	50.0	0.0	46.7	93	80-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	48.0	96	78-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Laboratory Control Sample
Client ID: LCS for batch 1310310 **Matrix:** WATER
Lab Sample ID: 1202899758
Instrument: VOA9.I **Analysis Date:** 06/27/2013 10:07 **Dilution:** 1
Analyst: RXY1
Purge Vol: 5 mL **Batch ID:** 1310310

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS	o-Xylene	50.0	0.0	47.8	96	80-120
100-42-5	LCS	Styrene	50.0	0.0	49.7	99	80-121
75-25-2	LCS	Bromoform	50.0	0.0	55.3	111	72-125
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	45.9	92	73-120
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	46.3	93	74-121
108-86-1	LCS	Bromobenzene	50.0	0.0	46.5	93	79-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	47.3	95	75-125
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	47.6	95	77-121
98-82-8	LCS	Isopropylbenzene	50.0	0.0	49.8	100	76-125
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	48.7	97	77-123
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	48.0	96	75-120
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	50.5	101	79-123
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	48.7	97	77-121
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	49.5	99	76-124
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	49.2	98	79-125
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	47.5	95	78-120
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	48.0	96	77-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	50.5	101	75-127
96-12-8	LCS	1,2-Dibromo-3-chloropropane	50.0	0.0	56.0	112	69-128
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	50.9	102	75-128
91-20-3	LCS	Naphthalene	50.0	0.0	49.3	99	71-125
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	50.3	101	73-125

Quality Control Summary
Spike Recovery Report

SDG Number: **2013-951**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1310310**
Matrix: **WATER**
Lab Sample ID: **1202899758**
Instrument: **VOA9.I**
Analysis Date: **06/27/2013 10:07**
Dilution: **1**
Analyst: **RXY1**
Purge Vol: **5 mL**
Batch ID: **1310310**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	51.3	103	75-123
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	51.7	103	80-124
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	46.7	93	79-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	4960	99	66-138

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 2013-951 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 1310310 **Matrix:** WATER

Lab Sample ID: 1202899759

Instrument: VOA9.I **Analysis Date:** 06/27/2013 11:03 **Dilution:** 1

Analyst: RXY1

Purge Vol: 5 mL **Batch ID:** 1310310

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	188	75	28-152
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	266	107	65-157
107-05-1	LCS	Allyl chloride	250	0.0	238	95	60-135
107-13-1	LCS	Acrylonitrile	250	0.0	231	92	64-131
107-12-0	LCS	Propionitrile	250	0.0	233	93	67-135
126-98-7	LCS	Methacrylonitrile	250	0.0	229	92	64-132
80-62-6	LCS	Methyl methacrylate	250	0.0	244	97	66-129
97-63-2	LCS	Ethyl methacrylate	250	0.0	259	103	66-132
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2200	88	60-136
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	44.8	90	45-159

Method Blank Summary

SDG Number:	**2013-951**	**Client:**	**ARSL001**	**Matrix:**	**GROUND WATER**
Client ID:	**MB for batch 1310310**	**Instrument ID:**	**VOA9.I**	**Data File:**	**062513V9\9S206B.D**
Lab Sample ID:	**1202898208**	**Prep Date:**	**06/25/2013 08:49**	**Analyzed:**	**06/25/13 08:49**
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 1310310	1202898218	062513V9\9S203L.D	06/25/13	0727
02	LCS for batch 1310310	1202898219	062513V9\9S205L.D	06/25/13	0822
03	CALA-13-33416	327622003	062513V9\9S210.D	06/25/13	1038
04	CALA-13-33423	327622001	062513V9\9S213.D	06/25/13	1157

Method Blank Summary

SDG Number:	**2013-951**	**Client:**	**ARSL001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1310310**	**Instrument ID:**	**VOA9.I**	**Data File:**	**062713V9\9S406B5.D**
Lab Sample ID:	**1202899757**	**Prep Date:**	**06/27/2013 11:31**	**Analyzed:**	**06/27/13 11:31**
Column:	**DB-624**				

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

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
06	LCS for batch 1310310	1202899758	062713V9\9S403L5.D	06/27/13	1007
07	LCS for batch 1310310	1202899759	062713V9\9S405L5.D	06/27/13	1103
08	CAWA-13-33604PS	1202898212	062713V9\9S422.D	06/27/13	1847
09	CAWA-13-33604PSD	1202898216	062713V9\9S423.D	06/27/13	1914
10	CAWA-13-33604PS	1202898213	062713V9\9S426.D	06/27/13	2036
11	CAWA-13-33604PSD	1202898217	062713V9\9S427.D	06/27/13	2104

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898208**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:49**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:49**				
Data File:	**062513V9\9S206B.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	0.300	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	2.00	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	2.20	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	3.00	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:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898208**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:49**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:49**				
Data File:	**062513V9\9S206B.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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	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	1.50	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:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898208**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:49**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:49**				
Data File:	**062513V9\9S206B.D**	**Column:**	**DB-624**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.6	50.0	ug/L	95.1	(78%-124%)
Bromofluorobenzene	48.5	50.0	ug/L	97.0	(80%-120%)
Toluene-d8	49.5	50.0	ug/L	99.1	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.212	7.61	ug/L	0	J
	unknown	5.283	5.98	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898212**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 18:47**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 18:47**				
Data File:	**062713V9\9S422.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		54.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		58.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		48.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		48.0	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		54.2	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		57.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		55.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		48.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		49.9	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		50.8	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		60.2	ug/L	0.300	1.00
106-93-4	1,2-Dibromoethane		50.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		50.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.5	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.6	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		48.9	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		47.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		49.0	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		56.2	ug/L	0.300	1.00
78-93-3	2-Butanone		247	ug/L	2.00	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		249	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		49.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		52.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		255	ug/L	1.50	5.00
67-64-1	Acetone		224	ug/L	3.00	10.0
75-05-8	Acetonitrile		1280	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		50.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		47.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		52.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		55.2	ug/L	0.300	1.00
75-25-2	Bromoform		57.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898212**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 18:47**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 18:47**				
Data File:	**062713V9\9S422.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		52.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		298	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		60.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.7	ug/L	0.300	1.00
75-00-3	Chloroethane		54.2	ug/L	0.300	1.00
67-66-3	Chloroform		52.5	ug/L	0.300	1.00
74-87-3	Chloromethane		59.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		54.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.4	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		61.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		52.8	ug/L	0.300	1.00
74-88-4	Iodomethane		259	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		52.6	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		48.6	ug/L	3.00	10.0
91-20-3	Naphthalene		51.3	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		53.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		52.5	ug/L	0.300	1.00
108-88-3	Toluene		56.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		53.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		56.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		289	ug/L	1.50	5.00
75-01-4	Vinyl chloride		55.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		54.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		103	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5600	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		54.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.9	ug/L	0.300	1.00
95-47-6	o-Xylene		51.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		53.3	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898212**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 18:47**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 18:47**				
Data File:	**062713V9\9S422.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		52.5	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		55.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		53.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.4	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	51.5	50.0	ug/L	103	(80%-120%)
Toluene-d8	51.7	50.0	ug/L	103	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898213**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 20:36**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 20:36**				
Data File:	**062713V9\9S426.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	0.300	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	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		43.9	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	2.20	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	3.00	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		246	ug/L	1.50	5.00
107-05-1	Allyl chloride		235	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:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898213**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 20:36**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 20:36**				
Data File:	**062713V9\9S426.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		268	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		2500	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		244	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		252	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		251	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		259	ug/L	1.50	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:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898213**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 20:36**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 20:36**				
Data File:	**062713V9\9S426.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	51.7	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	50.8	50.0	ug/L	102	(80%-120%)
Toluene-d8	50.0	50.0	ug/L	99.9	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898216**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 19:14**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 19:14**				
Data File:	**062713V9\9S423.D**	**Column:**	**DB-624**		

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		51.9	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		45.3	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		49.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		45.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		49.7	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.6	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		57.6	ug/L	0.300	1.00
106-93-4	1,2-Dibromoethane		47.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		47.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		47.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.5	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		45.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		46.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		50.8	ug/L	0.300	1.00
78-93-3	2-Butanone		215	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		223	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		47.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		233	ug/L	1.50	5.00
67-64-1	Acetone		192	ug/L	3.00	10.0
75-05-8	Acetonitrile		1120	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		46.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		50.8	ug/L	0.300	1.00
75-25-2	Bromoform		53.6	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898216**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 19:14**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 19:14**				
Data File:	**062713V9\9S423.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		47.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		263	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		53.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.2	ug/L	0.300	1.00
75-00-3	Chloroethane		48.5	ug/L	0.300	1.00
67-66-3	Chloroform		48.3	ug/L	0.300	1.00
74-87-3	Chloromethane		54.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		46.6	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		55.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		45.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		46.9	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		51.4	ug/L	0.300	1.00
74-88-4	Iodomethane		234	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		49.1	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.5	ug/L	3.00	10.0
91-20-3	Naphthalene		51.0	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		49.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.3	ug/L	0.300	1.00
108-88-3	Toluene		53.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		50.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		259	ug/L	1.50	5.00
75-01-4	Vinyl chloride		51.1	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		49.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		96.0	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4940	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		46.7	ug/L	0.300	1.00
95-47-6	o-Xylene		47.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		50.2	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898216**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 19:14**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 19:14**				
Data File:	**062713V9\9S423.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		46.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		49.4	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	48.9	50.0	ug/L	97.7	(78%-124%)
Bromofluorobenzene	51.4	50.0	ug/L	103	(80%-120%)
Toluene-d8	50.7	50.0	ug/L	101	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898217**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 21:04**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 21:04**				
Data File:	**062713V9\9S427.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	0.300	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	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		43.0	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	2.20	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	3.00	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		222	ug/L	1.50	5.00
107-05-1	Allyl chloride		229	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:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898217**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 21:04**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 21:04**				
Data File:	**062713V9\9S427.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		241	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		221	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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		224	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		254	ug/L	1.50	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:	**2013-951**	**Date Collected:**	**06/13/2013 07:55**	**Matrix:**	**W**
Lab Sample ID:	**1202898217**	**Date Received:**	**06/15/2013 09:40**		
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**CAWA-13-33604PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 21:04**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 21:04**				
Data File:	**062713V9\9S427.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	(78%-124%)
Bromofluorobenzene	49.9	50.0	ug/L	99.7	(80%-120%)
Toluene-d8	50.0	50.0	ug/L	99.9	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898218**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 07:27**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 07:27**				
Data File:	**062513V9\9S203L.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		54.2	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		49.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.2	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		52.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		52.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		53.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		47.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		53.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		51.0	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		59.1	ug/L	0.300	1.00
106-93-4	1,2-Dibromoethane		50.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		50.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		49.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		47.6	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		49.9	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		56.0	ug/L	0.300	1.00
78-93-3	2-Butanone		270	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		48.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		246	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		48.6	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		52.3	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		240	ug/L	1.50	5.00
67-64-1	Acetone		278	ug/L	3.00	10.0
75-05-8	Acetonitrile		1200	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		50.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		48.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		51.8	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		55.7	ug/L	0.300	1.00
75-25-2	Bromoform		56.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898218**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 07:27**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 07:27**				
Data File:	**062513V9\9S203L.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		43.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		278	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		56.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.7	ug/L	0.300	1.00
75-00-3	Chloroethane		46.0	ug/L	0.300	1.00
67-66-3	Chloroform		51.2	ug/L	0.300	1.00
74-87-3	Chloromethane		41.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		57.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		37.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		53.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		51.1	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		50.8	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		47.5	ug/L	3.00	10.0
91-20-3	Naphthalene		51.6	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		53.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.9	ug/L	0.300	1.00
108-88-3	Toluene		50.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.5	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		49.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		309	ug/L	1.50	5.00
75-01-4	Vinyl chloride		43.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		52.5	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		56.0	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		104	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5150	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		52.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.8	ug/L	0.300	1.00
95-47-6	o-Xylene		52.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		51.5	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898218**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 07:27**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 07:27**				
Data File:	**062513V9\9S203L.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.9	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		51.3	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		52.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		54.6	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.8	50.0	ug/L	93.5	(78%-124%)
Bromofluorobenzene	46.7	50.0	ug/L	93.3	(80%-120%)
Toluene-d8	48.2	50.0	ug/L	96.4	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898219**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:22**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:22**				
Data File:	**062513V9\9S205L.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	0.300	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	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		44.5	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	2.20	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	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		207	ug/L	1.50	5.00
107-13-1	Acrylonitrile		235	ug/L	1.50	5.00
107-05-1	Allyl chloride		245	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:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898219**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:22**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:22**				
Data File:	**062513V9\9S205L.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		257	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		2310	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		234	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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		234	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		274	ug/L	1.50	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:	**2013-951**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1202898219**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/25/2013 08:22**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/25/2013 08:22**				
Data File:	**062513V9\9S205L.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	99.0	(78%-124%)
Bromofluorobenzene	50.3	50.0	ug/L	101	(80%-120%)
Toluene-d8	48.9	50.0	ug/L	97.7	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899757**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:31**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:31**				
Data File:	**062713V9\9S406B5.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	0.300	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	2.00	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	2.20	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	3.00	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:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899757**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:31**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:31**				
Data File:	**062713V9\9S406B5.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	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	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	1.50	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:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899757**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**MB for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:31**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:31**				
Data File:	**062713V9\9S406B5.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	49.3	50.0	ug/L	98.6	(78%-124%)
Bromofluorobenzene	49.9	50.0	ug/L	99.7	(80%-120%)
Toluene-d8	49.6	50.0	ug/L	99.2	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown hydrocarbon	4.197	8.8	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899758**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 10:07**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 10:07**				
Data File:	**062713V9\9S403L5.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		51.7	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		45.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		44.8	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		48.2	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		51.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		51.1	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		46.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		51.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		56.0	ug/L	0.300	1.00
106-93-4	1,2-Dibromoethane		47.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		46.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		47.2	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		47.5	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		48.0	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		53.6	ug/L	0.300	1.00
78-93-3	2-Butanone		222	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		47.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		215	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		48.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		234	ug/L	1.50	5.00
67-64-1	Acetone		211	ug/L	3.00	10.0
75-05-8	Acetonitrile		1090	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		46.6	ug/L	0.300	1.00
108-86-1	Bromobenzene		46.5	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.8	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.6	ug/L	0.300	1.00
75-25-2	Bromoform		55.3	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899758**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 10:07**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 10:07**				
Data File:	**062713V9\9S403L5.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		261	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		54.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.7	ug/L	0.300	1.00
75-00-3	Chloroethane		47.8	ug/L	0.300	1.00
67-66-3	Chloroform		48.0	ug/L	0.300	1.00
74-87-3	Chloromethane		51.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.5	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.6	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		55.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		44.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.9	ug/L	0.300	1.00
74-88-4	Iodomethane		231	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		49.8	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		43.7	ug/L	3.00	10.0
91-20-3	Naphthalene		49.3	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		49.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		50.7	ug/L	0.300	1.00
108-88-3	Toluene		47.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.8	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		50.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		282	ug/L	1.50	5.00
75-01-4	Vinyl chloride		49.7	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		48.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		51.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		98.0	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4960	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		47.3	ug/L	0.300	1.00
95-47-6	o-Xylene		47.8	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		49.5	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899758**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 10:07**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 10:07**				
Data File:	**062713V9\9S403L5.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		45.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.5	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		51.5	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.5	50.0	ug/L	99.0	(78%-124%)
Bromofluorobenzene	51.1	50.0	ug/L	102	(80%-120%)
Toluene-d8	49.3	50.0	ug/L	98.6	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899759**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:03**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:03**				
Data File:	**062713V9\9S405L5.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	0.300	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	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		44.8	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	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	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		188	ug/L	1.50	5.00
107-13-1	Acrylonitrile		231	ug/L	1.50	5.00
107-05-1	Allyl chloride		238	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:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899759**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:03**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:03**				
Data File:	**062713V9\9S405L5.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		259	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		2200	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		244	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		233	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		266	ug/L	1.50	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:	**2013-951**			**Matrix:**	**WATER**
Lab Sample ID:	**1202899759**				
Client Sample:	**QC for batch 1310310**	**Client:**	**ARSL001**	**Project:**	**QC**
Client ID:	**LCS for batch 1310310**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1310310**	**Inst:**	**VOA9.I**	**Dilution:**	**1**
Run Date:	**06/27/2013 11:03**	**Analyst:**	**RXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**06/27/2013 11:03**				
Data File:	**062713V9\9S405L5.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	48.5	50.0	ug/L	96.9	(78%-124%)
Bromofluorobenzene	51.9	50.0	ug/L	104	(80%-120%)
Toluene-d8	49.3	50.0	ug/L	98.6	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
03-JUL-13	Federal	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	SW846 8260B DOE-AL	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1310310	See Below		

Potentially affected work order(s)(SDG): 327622(2013-951),327697,327704(2013-956),327705(2013-957),327706(2013-958),327707(2013-959)

Application Issues:

Failed Recovery for MS/PS

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	**DER Disposition:**
1. The MS 1202898213 and MSD 1202898217 did not meet the acceptable recovery criteria for Acrolein. MS recovered at 0.00%. MSD recovered at 0.00%. The limits are 30%-167%.	1. The Acrolein spike was inadvertently omitted from the MS/MSD by the analyst. The remaining Short list compounds were spiked with acceptable results. The data were narrated and reported since the recoveries were acceptable per the client's 5% tolerance.

Originator's Name:

Ramona Yarbrough 03-JUL-13

Data Validator/Group Leader:

Kelle Bellamy 08-JUL-13

Perchlorates by LCMSMS Analysis

Case Narrative

Perchlorate by LC-MS/MS
ARS International (ARSL)
SDG 2013-951

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:	SW846 6850 Modified
Prep Method:	SW846 6850 Modified
Analytical Batch Number:	1308476
Prep Batch Number:	1308475

Sample Analysis

Sample ID	Client ID
327622002	CALA-13-33431
1202893411	Interference Check Sample (ICS)
1202893407	Method Blank (MB)
1202893408	Laboratory Control Sample (LCS)
1202893409	327623002(CAPU-13-34783) Matrix Spike (MS)
1202893410	327623002(CAPU-13-34783) 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# 10.

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
The initial calibration verification standard (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 met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

QC Sample Designation
Client sample 327623002 (CAPU-13-34783) from SDG 2013-952 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement
The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement
The MSD 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.

Retention Time Standard Area Acceptance
The retention time 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 Method 332.0, 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
Sample 327622002 (CALA-13-33431) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

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
Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations.

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 not internally corrected for using Perchlorate-O (18). They are external calibrations.

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 either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. 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

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

ARSL001 ARS International (63641-10)

Client SDG: 2013-951 GEL Work Order: 327622

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, 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: Michael A. Penny Jr. **Name: Michael Penny**

Date: 02 JUL 2013 **Title: Group Leader**

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CALA-13-33431

Date Received: 14-JUN-13

GEL Job No (SDG): 2013-951

GEL Sample ID: 327622002

Date Filtered: 19-JUN-13

Injection 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	0.0616	ug/L	J	1	19-JUN-13 15:57	per0619029a
	Perchlorate Isotope Ratio			2.91			1	19-JUN-13 15:57	per0619029a
14797-73-0	Perchlorate-101	.05	.2	0.0652	ug/L	J	1	19-JUN-13 15:57	per0619029a
	Perchlorate-O(18)			0.506	ug/L		1	19-JUN-13 15:57	per0619029a

^ 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): 2013-951

Extract Batch Code: 1308475

Date Filtered: 19-JUN-13

Matrix: WATER

Sample ID: 1202893408

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.188	ug/L	94.1		85 - 115
Perchlorate Isotope Ratio		3.08				-
Perchlorate-101	0.200	.188	ug/L	94.2		85 - 115
Perchlorate-O(18)		.494	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): 2013-951

Extract Batch Code: 1308475

Date Extracted: 19-JUN-13

GEL MS/PS ID: 1202893409

Client ID: CAPU-13-34783

GEL MSD/PSD ID: 1202893410

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	0.338	ug/L	0.516	89.3	.528	95.4	2.33	30	75 - 125
Perchlorate Isotope Ratio	0	3.10		3.14		3.1		.995		-
Perchlorate-101	0.200	0.336	ug/L	0.508	85.8	.525	94.4	3.32	30	75 - 125
Perchlorate-O(18)	0	0.475	ug/L	0.471		.479		1.7		-

^ 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 LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
MB

Date Received: 19-JUN-13

GEL Job No (SDG): 2013-951

GEL Sample ID: 1202893407

Date Filtered: 19-JUN-13

Injection 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	19-JUN-13 13:41	per0619012a
	Perchlorate Isotope Ratio						1	19-JUN-13 13:41	per0619012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	19-JUN-13 13:41	per0619012a
	Perchlorate-O(18)			0.484	ug/L		1	19-JUN-13 13:41	per0619012a

^ 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 = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
LCS

Date Received: 19-JUN-13

GEL Job No (SDG): 2013-951

GEL Sample ID: 1202893408

Date Filtered: 19-JUN-13

Injection 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	0.188	ug/L	J	1	19-JUN-13 13:49	per0619013a
	Perchlorate Isotope Ratio			3.08			1	19-JUN-13 13:49	per0619013a
14797-73-0	Perchlorate-101	.05	.2	0.188	ug/L	J	1	19-JUN-13 13:49	per0619013a
	Perchlorate-O(18)			0.494	ug/L		1	19-JUN-13 13:49	per0619013a

^ 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 LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
ICS

Date Received:

GEL Job No (SDG): 2013-951

GEL Sample ID: 1202893411

Date Filtered: 19-JUN-13

Injection 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		1	19-JUN-13 13:57	per0619014a
	Perchlorate Isotope Ratio			3.04			1	19-JUN-13 13:57	per0619014a
14797-73-0	Perchlorate-101	.05	.2	0.203	ug/L		1	19-JUN-13 13:57	per0619014a
	Perchlorate-O(18)			0.515	ug/L		1	19-JUN-13 13:57	per0619014a

^ 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 LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAPU-13-34783MS

Date Received: 14-JUN-13

GEL Job No (SDG): 2013-951

GEL Sample ID: 1202893409

Date Filtered: 19-JUN-13

Injection 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	0.516	ug/L		1	19-JUN-13 14:29	per0619018a
	Perchlorate Isotope Ratio			3.14			1	19-JUN-13 14:29	per0619018a
14797-73-0	Perchlorate-101	.05	.2	0.508	ug/L		1	19-JUN-13 14:29	per0619018a
	Perchlorate-O(18)			0.471	ug/L		1	19-JUN-13 14:29	per0619018a

^ 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 = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1308475

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAPU-13-34783MSD

Date Received: 14-JUN-13

GEL Job No (SDG): 2013-951

GEL Sample ID: 1202893410

Date Filtered: 19-JUN-13

Injection 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	0.528	ug/L		1	19-JUN-13 14:37	per0619019a
	Perchlorate Isotope Ratio			3.1			1	19-JUN-13 14:37	per0619019a
14797-73-0	Perchlorate-101	.05	.2	0.525	ug/L		1	19-JUN-13 14:37	per0619019a
	Perchlorate-O(18)			0.479	ug/L		1	19-JUN-13 14:37	per0619019a

^ 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 = Instrument Value X $\frac{\text{Concentrated Extract Volume}}{\text{Aliquot}}$ X $\frac{1}{\%\text{Solids}}$

Metals Analysis

Case Narrative

Metals Fractional Narrative
ARS International (ARSL)
SDG 2013-951

Sample Analysis

Sample ID	Client ID
327622002	CALA-13-33431
1202892844	Method Blank (MB) **ICP**
1202892845	Laboratory Control Sample (LCS)
1202892848	327626001(WST35-13-31938L) Serial Dilution (SD)
1202892846	327626001(WST35-13-31938D) Sample Duplicate (DUP)
1202892847	327626001(WST35-13-31938S) Matrix Spike (MS)
1202892839	Method Blank (MB) **ICP-MS**
1202892840	Laboratory Control Sample (LCS)
1202892843	327626001(WST35-13-31938L) Serial Dilution (SD)
1202892841	327626001(WST35-13-31938D) Sample Duplicate (DUP)
1202892842	327626001(WST35-13-31938S) Matrix Spike (MS)
1202901486	Method Blank (MB) **CVAA**
1202901487	Laboratory Control Sample (LCS)
1202901493	327940001(WTLAP-13-31087L) Serial Dilution (SD)
1202901491	327940001(WTLAP-13-31087D) Sample Duplicate (DUP)
1202901492	327940001(WTLAP-13-31087S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1308250, 1308248, 1311681 and 1313406
Prep Batch :	1308249, 1308247 and 1311670
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 26 and GL-GC-E-107 REV# 8
Analytical Method:	SW846 3005/6010B, SW846 3005/6020 DOE-AL, EPA 245.1/245.2 and SM 2340 B
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 a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadruple mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/-7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

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. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

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

CRDL Requirements
All CRDL standards met the advisory control limits with the exception of mercury, which recovered outside of the advisory limits of 70-130%.

ICSA/ICSAB Statement
All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blank (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 (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: 327626001 (WST35-13-31938)-ICP and ICP-MS and 327940001 (WTLAP-13-31087)-CVAA.

Matrix Spike (MS) Recovery Statement
The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes with the exception of cadmium, chromium, lead, molybdenum, selenium, aluminum, barium, beryllium, calcium, iron, magnesium, manganese, strontium, tin, vanadium, and zinc.

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 detection 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. All applicable analytes met these requirements.

Serial Dilution % Difference Statement
The serial dilution is used to assess matrix suppression or enhancement. Raw element

concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established criteria of less than 10% difference (%D) with the exception of molybdenum, nickel, and tin.

Technical Information

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

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information
The samples in this SDG were prepared exactly 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.

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DERs were generated for this SDG: 1199319 and 1200315. A copy of each DER is included in the

Miscellaneous Data section of this package.

Additional Comments
Additional comments were not required for this SDG.
Total Hardness by Calculation is determined using the results of Total Calcium (Ca) and Total Magnesium (Mg) determined by ICP or ICP-MS.

Hardness = 2.497 (Ca) + 4.118 (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.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  **Date:** 07/10/13

Sample Data Summary

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

ARSL001 ARS International (63641-10)

Client SDG: 2013-951 GEL Work Order: 327622

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria

J Value is estimated

N Metals--The Matrix spike sample recovery is not within specified control limits

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by  07/10/13

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013−951 **CONTRACT:** ESHL00210 **METHOD TYPE:** EPA

SAMPLE ID: 327622002 **BASIS:** As Received **DATE COLLECTED** 12−JUN−13

CLIENT ID: CALA−13−33431 **LEVEL:** Low **DATE RECEIVED** 14−JUN−13

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	NOR1	07/02/13 10:46	070213W1−8	1311681

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013−951 **CONTRACT:** ESHL00210 **METHOD TYPE:** SW846

SAMPLE ID: 327622002 **BASIS:** As Received **DATE COLLECTED** 12−JUN−13

CLIENT ID: CALA−13−33431 **LEVEL:** Low **DATE RECEIVED** 14−JUN−13

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	06/24/13 10:10	062413−3	1308250
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	07/01/13 18:55	130701−7	1308248
7440−38−2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	06/26/13 09:23	130625−5	1308248
7440−39−3	Barium	118	ug/L		1	5	5	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−42−8	Boron	59.4	ug/L		15	50	50	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−43−9	Cadmium	0.137	ug/L	J	0.11	1	1	1	MS	BAJ	06/26/13 09:23	130625−5	1308248
7440−70−2	Calcium	41000	ug/L		50	200	200	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−47−3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	06/25/13 04:34	130624−4	1308248
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/24/13 15:02	062413C−1	1308250
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/24/13 10:10	062413−3	1308250
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/26/13 09:23	130625−5	1308248
7439−95−4	Magnesium	4390	ug/L		110	300	300	1	P	HSC	06/24/13 10:10	062413−3	1308250
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/24/13 10:10	062413−3	1308250
7439−98−7	Molybdenum	1.2	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/25/13 04:34	130624−4	1308248
7440−02−0	Nickel	1.71	ug/L	J	0.5	2	2	1	MS	BAJ	06/25/13 04:34	130624−4	1308248
7440−09−7	Potassium	2440	ug/L		50	150	150	1	P	HSC	06/25/13 16:43	062513A−2	1308250
7782−49−2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/27/13 00:02	130626−6	1308248
7631−86−9	Silica	58400	ug/L		53	213	213	1	P	HSC	06/25/13 16:43	062513A−2	1308250
7440−22−4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/25/13 04:34	130624−4	1308248
7440−23−5	Sodium	37000	ug/L		100	300	300	1	P	HSC	06/25/13 16:43	062513A−2	1308250
7440−24−6	Strontium	357	ug/L		1	5	5	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−28−0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/26/13 09:23	130625−5	1308248
7440−31−5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−61−1	Uranium	1.43	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/26/13 09:23	130625−5	1308248
7440−62−2	Vanadium	8.92	ug/L		1	5	5	1	P	HSC	06/24/13 10:10	062413−3	1308250
7440−66−6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/24/13 15:02	062413C−1	1308250

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013−951 **CONTRACT:** ESHL00210 **METHOD TYPE:**

SAMPLE ID: 327622002 **BASIS:** As Received **DATE COLLECTED** 12−JUN−13

CLIENT ID: CALA−13−33431 **LEVEL:** Low **DATE RECEIVED** 14−JUN−13

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	120	mg/L		0.453	1.24	1.24	1		AXH3	07/09/13 14:22		1313406

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1308248	1308247	SW846 3005A	50	mL	50	mL	06/21/13	MTM1
1308250	1308249	SW846 3005A	50	mL	50	mL	06/21/13	MTM1
1311681	1311670	EPA 245.1/245.2 Prep	20	mL	20	mL	07/01/13	AXS5

***Analytical Methods:**

MS **SW846 3005/6020 DOE−AL**
P **SW846 3005/6010B**
AV **EPA 245.1/245.2**

Quality Control Summary

METALS
−3b−
PREPARATION BLANK SUMMARY

SDG NO. 2013−951
Contract: ESHL00210
Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
1202892839								
	Antimony	1	ug/L	+/−3	U	MS	1	3
	Arsenic	1.7	ug/L	+/−5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/−1	U	MS	0.11	1
	Chromium	2	ug/L	+/−10	U	MS	2	10
	Selenium	1.5	ug/L	+/−5	U	MS	1.5	5
	Thallium	0.45	ug/L	+/−2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/−0.2	U	MS	0.067	0.2
	Silver	0.2	ug/L	+/−1	U	MS	0.2	1
	Nickel	0.5	ug/L	+/−2	U	MS	0.5	2
	Molybdenum	0.165	ug/L	+/−0.5	U	MS	0.165	0.5
	Lead	0.5	ug/L	+/−2	U	MS	0.5	2
1202892844								
	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
	Aluminum	68	ug/L	+/−200	U	P	68	200
	Barium	1	ug/L	+/−5	U	P	1	5
	Silica	53	ug/L	+/−213	U	P	53	213
	Sodium	204	ug/L	+/−300	J	P	100	300
	Strontium	1	ug/L	+/−5	U	P	1	5
	Tin	2.5	ug/L	+/−10	U	P	2.5	10
	Vanadium	1	ug/L	+/−5	U	P	1	5
	Zinc	3.3	ug/L	+/−10	U	P	3.3	10
1202901486								
	Mercury	−0.076	ug/L	+/−0.2	J	AV	0.067	0.2

***Analytical Methods:**

MS	**SW846 3005/6020 DOE−AL**
P	**SW846 3005/6010B**
AV	**EPA 245.1/245.2**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2013−951 **Client ID** WST35−13−31938S

Contract: ESHL00210 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 327626001 **Spike ID:** 1202892842

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75−125	91.6		49.7		50	83.7		MS
Arsenic	ug/L	75−125	116		64.1		50	104		MS
Cadmium	ug/L	75−125	36.8		2.75	U	50	73.5	N	MS
Chromium	ug/L	75−125	5.19	J	2	U	50	7.99	N	MS
Lead	ug/L	75−125	17.2		2.5	U	50	30	N	MS
Molybdenum	ug/L	75−125	138		103		50	69.8	N	MS
Nickel	ug/L		583		516		50	134	N/A	MS
Selenium	ug/L	75−125	75	U	75	U	50	0	N	MS
Silver	ug/L	75−125	45.4		2.66		50	85.5		MS
Thallium	ug/L	75−125	44.3		2.25	U	50	88.2		MS
Uranium	ug/L	75−125	58.7		8.33		50	101		MS

***Analytical Methods:**

MS SW846 3005/6020 DOE−AL

METALS
−5a−

Matrix Spike Summary

SDG NO. 2013−951 **Client ID** WST35−13−31938S

Contract: ESHL00210 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 327626001 **Spike ID:** 1202892847

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Aluminum	ug/L	75−125	68	U	68	U	5000	0	N	P
Barium	ug/L	75−125	4.52	J	1.03	J	500	.7	N	P
Beryllium	ug/L	75−125	312		1	U	500	62.4	N	P
Boron	ug/L	75−125	1090		659		500	86.9		P
Calcium	ug/L	75−125	50	U	50	U	5000	0	N	P
Cobalt	ug/L	75−125	399		14.9		500	76.9		P
Copper	ug/L		37600		37300		500	65.2	N/A	P
Iron	ug/L	75−125	53.1	J	75.4	J	5000	−.446	N	P
Magnesium	ug/L	75−125	110	U	110	U	5000	0	N	P
Manganese	ug/L	75−125	304		84.3		500	44	N	P
Potassium	ug/L		85300		77100		5000	163	N/A	P
Silica	ug/L		1060000		1100000		10700	−282	N/A	P
Sodium	ug/L		10800000		10500000		5000	6600	N/A	P
Strontium	ug/L	75−125	1	U	1	U	500	0	N	P
Tin	ug/L	75−125	1110		813		500	58.9	N	P
Vanadium	ug/L	75−125	101		4.53	J	500	19.2	N	P
Zinc	ug/L	75−125	791		430		500	72.2	N	P

***Analytical Methods:**

P **SW846 3005/6010B**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2013−951 **Client ID** WTLAP−13−31087S

Contract: ESHL00510 **Level:** Low

Matrix: STORM WATER **% Solids:**

Sample ID: 327940001 **Spike ID:** 1202901492

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	2.04		0.067	U	2	102		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

Metals
−6−
Duplicate Sample Summary

SDG No.: 2013−951 **Lab Code:** GEL

Contract: ESHL00210 **Client ID:** WST35−13−31938D

Matrix: LIQUID **Level:** Low

Sample ID: 327626001 **Duplicate ID:** 1202892841 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L	+/−15	49.7		42.3		16		MS
Arsenic	ug/L	+/−25	64.1		69.8		8.48		MS
Cadmium	ug/L		2.75	U	2.75	U			MS
Chromium	ug/L		2	U	2	U			MS
Lead	ug/L		2.5	U	2.5	U			MS
Molybdenum	ug/L	+/−20%	103		89.7		13.6		MS
Nickel	ug/L	+/−20%	516		594		14		MS
Selenium	ug/L		75	U	75	U			MS
Silver	ug/L	+/−1	2.66		2.62		1.63		MS
Thallium	ug/L		2.25	U	2.25	U			MS
Uranium	ug/L	+/−20%	8.33		8.28		.542		MS

***Analytical Methods:**

MS SW846 3005/6020 DOE−AL

Metals
−6−
Duplicate Sample Summary

SDG No.: 2013−951 **Lab Code:** GEL

Contract: ESHL00210 **Client ID:** WST35−13−31938D

Matrix: LIQUID **Level:** Low

Sample ID: 327626001 **Duplicate ID:** 1202892846 **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	1.03	J	1.2	J	15.9		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L	+/−20%	659		611		7.56		P
Calcium	ug/L		50	U	50	U			P
Cobalt	ug/L	+/−5	14.9		13		13		P
Copper	ug/L	+/−20%	37300		37700		1.06		P
Iron	ug/L	+/−100	75.4	J	73.4	J	2.74		P
Magnesium	ug/L		110	U	110	U			P
Manganese	ug/L	+/−20%	84.3		77.4		8.52		P
Potassium	ug/L	+/−20%	77100		79600		3.2		P
Silica	ug/L	+/−20%	1100000		1060000		3.64		P
Sodium	ug/L	+/−20%	10500000		10800000		3.29		P
Strontium	ug/L		1	U	1	U			P
Tin	ug/L	+/−20%	813		695		15.7		P
Vanadium	ug/L	+/−5	4.53	J	3.54	J	24.6		P
Zinc	ug/L	+/−200	430		437		1.6		P

***Analytical Methods:**

P SW846 3005/6010B

Metals
−6−
Duplicate Sample Summary

SDG No.: 2013−951 **Lab Code:** GEL

Contract: ESHL00210 **Client ID:** WTLAP−13−31087D

Matrix: LIQUID **Level:** Low

Sample ID: 327940001 **Duplicate ID:** 1202901491 **Percent Solids for Dup:** N/A

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

***Analytical Methods:**
AV EPA 245.1/245.2

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2013−951

Contract: ESHL00210

Aqueous LCS Source: O2Si **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1202892840								
	Antimony	ug/L	50	51.3		103	80−120	MS
	Arsenic	ug/L	50	46.9		93.8	80−120	MS
	Cadmium	ug/L	50	53.4		107	80−120	MS
	Chromium	ug/L	50	49.6		99.2	80−120	MS
	Lead	ug/L	50	51.1		102	80−120	MS
	Molybdenum	ug/L	50	46.5		92.9	80−120	MS
	Nickel	ug/L	50	51.2		102	80−120	MS
	Selenium	ug/L	50	53.6		107	80−120	MS
	Silver	ug/L	50	52.1		104	80−120	MS
	Thallium	ug/L	50	47		94	80−120	MS
	Uranium	ug/L	50	55.4		111	80−120	MS

***Analytical Methods:**

MS **SW846 3005/6020 DOE−AL**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2013−951

Contract: ESHL00210

Aqueous LCS Source: OS2I **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1202892845								
	Aluminum	ug/L	5000	5080		102	80−120	P
	Barium	ug/L	500	502		100	80−120	P
	Beryllium	ug/L	500	501		100	80−120	P
	Boron	ug/L	500	470		93.9	80−120	P
	Calcium	ug/L	5000	5010		100	80−120	P
	Cobalt	ug/L	500	500		100	80−120	P
	Copper	ug/L	500	530		106	80−120	P
	Iron	ug/L	5000	5110		102	80−120	P
	Magnesium	ug/L	5000	5140		103	80−120	P
	Manganese	ug/L	500	501		100	80−120	P
	Potassium	ug/L	5000	4980		99.6	80−120	P
	Silica	ug/L	10700	10500		97.8	80−120	P
	Sodium	ug/L	5000	5410		108	80−120	P
	Strontium	ug/L	500	512		102	80−120	P
	Tin	ug/L	500	499		99.9	80−120	P
	Vanadium	ug/L	500	514		103	80−120	P
	Zinc	ug/L	500	509		102	80−120	P

***Analytical Methods:**

P **SW846 3005/6010B**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2013−951

Contract: ESHL00210

Aqueous LCS Source: GEL **Solid LCS Source:**

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1202901487								
	Mercury	ug/L	2	2.05		103	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2013−951 **Client ID** WST35−13−31938L

Contract: ESHL00210

Matrix: LIQUID **Level:** Low

Sample ID: 327626001 **Serial Dilution ID:** 1202892843

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Antimony	9.94		8.06	J	19			MS
Arsenic	12.8		17.7	J	38.4			MS
Cadmium	.11	U	.55	U				MS
Chromium	2	U	10	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	103		87.8		14.6	E	10	MS
Nickel	516		756		46.4	E	10	MS
Selenium	1.5	U	7.5	U				MS
Silver	2.66		2.42	J	9.16			MS
Thallium	.45	U	2.25	U				MS
Uranium	1.67		1.44		13.5			MS

***Analytical Methods:**

MS **SW846 3005/6020 DOE−AL**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2013−951 **Client ID** WST35−13−31938L

Contract: ESHL00210

Matrix: LIQUID **Level:** Low

Sample ID: 327626001 **Serial Dilution ID:** 1202892848

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	1.03	J	5	U	100			P
Beryllium	1	U	5	U				P
Boron	659		647		1.69			P
Calcium	50	U	250	U				P
Cobalt	14.9		13.2	J	11.1			P
Copper	1860		1790		3.77		10	P
Iron	75.4	J	150	U	100			P
Magnesium	110	U	550	U				P
Manganese	84.3		86.5		2.59			P
Potassium	771		831		7.75			P
Silica	11000		11400		3.84		10	P
Sodium	105000		111000		6.06		10	P
Strontium	1	U	5	U				P
Tin	813		726		10.7	E	10	P
Vanadium	4.53	J	6.03	J	33			P
Zinc	21.5		18.8	J	12.5			P

***Analytical Methods:**

P **SW846 3005/6010B**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2013−951 **Client ID** WTLAP−13−31087L

Contract: ESHL00210

Matrix: LIQUID **Level:** Low

Sample ID: 327940001 **Serial Dilution ID:** 1202901493

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

***Analytical Methods:**

AV **EPA 245.1/245.2**

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
02-JUL-13	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP/MS	SW846 3005/6020 DOE-AL	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1308248	See Below		

Potentially affected work order(s)(SDG): 327622(2013-951),327623(2013-952),327626(2013-953)

Application Issues:

Failed Recovery for MS/PS

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/PS: QC 1202892842MS	The matrix spike recovery failed outside of the control limits for Cr, Mo, Pb, Cd and Se due to possible matrix interferences and/or non-homogeneity. Per GEL's accredited methods and SOPs, a corrective action is not required and the data is qualified and reported.

Originator's Name:

Elizabeth Janssen 04-JUL-13

Data Validator/Group Leader:

Samantha Jacobs 04-JUL-13

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
08-JUL-13	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP	SW846 3005/6010B	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1308250	See Below		

Potentially affected work order(s)(SDG): 327622(2013-951),327623(2013-952),327626(2013-953)

Application Issues:

Failed Recovery for MS/PS

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed Recovery for MS/PS: QC 1202892847MS	1. The matrix spike recovery failed outside of the control limits for aluminum,barium,beryllium,calcium,iron,magnesium,manganese,strontium, tins,vanadium and zinc due to possible matrix interferences and/or non-homogeneity. Per GEL's accredited methods and SOPs, a corrective action is not required and the data is qualified and reported. Sample #327626001 had white particles that settles down in the bottom of container.

Originator's Name:

Helen Camello 08-JUL-13

Data Validator/Group Leader:

Louise Smith 09-JUL-13

General Chem Analysis

Case Narrative

General Chemistry Narrative
ARS International (ARSL)
SDG 2013-951

Method/Analysis Information

Product:	**Carbon, Total Organic**		
Analytical Batch:	1309042	**Method:**	SW 9060 Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 9060:

Sample ID	Client ID
327622001	CALA-13-33423
1202894929	Method Blank (MB)
1202894930	327623001(CAPU-13-34775) Sample Duplicate (DUP)
1202894931	327623001(CAPU-13-34775) Post Spike (PS)
1202894932	Laboratory Control Sample (LCS)

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# 12.

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 Model 1010 Total Organic 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 MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327623001 (CAPU-13-34775).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

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

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-analysis
The following samples were re-analyzed due to CCV failure: 1202894929 (MB), 1202894930 (CAPU-13-34775), 1202894931 (CAPU-13-34775), 1202894932 (LCS) and 327622001 (CALA-13-33423).

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.

Additional Comments
A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is effectively sparging away the inorganic carbon.

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:	1311655	**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
327622002	CALA-13-33431
1202901423	327622002(CALA-13-33431) Sample Duplicate (DUP)
1202901425	Laboratory Control Sample (LCS)

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# 11.

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 Conductivity analysis was performed on a Orion 160 Conductivity Meter.

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.

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327622002 (CALA-13-33431).

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

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.

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: 1308135 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
327622002	CALA-13-33431
1202892559	Laboratory Control Sample (LCS)
1202892561	327623002(CAPU-13-34783) 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# 21.

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 Electrode analysis was performed on a PerpHect pH Meter Orion 370.

Initial Calibration
All initial calibration requirements have been met for this SDG.

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

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327623002 (CAPU-13-34783).

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
The following sample from this sample group was received by the lab outside of the method specified holding time: 327622002 (CALA-13-33431).

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

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1194703 327622002 (CALA-13-33431).

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:	1307985	**Method:**	EPA 300.0 Anions Liquid 28 day

Sample Analysis

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

Sample ID	Client ID
327622002	CALA-13-33431
1202892153	Method Blank (MB)
1202892154	327396001(CAPU-13-34785) Sample Duplicate (DUP)
1202892155	327396001(CAPU-13-34785) Post Spike (PS)
1202892156	Laboratory Control Sample (LCS)

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# 21.

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 MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327396001 (CAPU-13-34785).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202892154 (CAPU-13-34785).

Technical Information

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

Holding Times
All samples in this SDG met the specified holding time.

Sample Dilutions
The following sample in this sample group was diluted due to high concentration: 327622002 (CALA-13-33431).

Sample Re-analysis
The following samples were re-analyzed due to CCV failure: 1202892153 (MB), 1202892154 (CAPU-13-34785), 1202892155 (CAPU-13-34785), 1202892156 (LCS) and 327622002 (CALA-13-33431).

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
The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1202892154 (CAPU-13-34785), 1202892155 (CAPU-13-34785) and 327622002 (CALA-13-33431).

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:	1308128	**Method:**	EPA 350.1 Nitrogen and Ammonia L
Prep Batch :	1308126	**Method:**	EEPA 350.2 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 350.1:

Sample ID	Client ID
327622002	CALA-13-33431
1202892527	Method Blank (MB)
1202892528	327172002(CAPU-13-34781) Sample Duplicate (DUP)
1202892530	327172002(CAPU-13-34781) Matrix Spike (MS)
1202892532	Laboratory Control Sample (LCS)

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 (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327172002 (CAPU-13-34781).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recovery for this sample set was within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
One or more of the values for the sample and/or duplicate are less than 5 times the Practical Quantitation Limit (PQL), and the difference is within one PQL value; therefore, the RPD is not applicable. 1202892528 (CAPU-13-34781).

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 following sample was re-analyzed due to CCV failure: 327622002 (CALA-13-33431).

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.

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:	1308288	**Method:**	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1308287	**Method:**	EEPA 351.2 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 351.2:

Sample ID	Client ID
327622001	CALA-13-33423
1202892933	Method Blank (MB)
1202892934	327172001(CAPU-13-34773) Sample Duplicate (DUP)
1202892935	327172003(CAPU-13-34778) Sample Duplicate (DUP)
1202892936	327172001(CAPU-13-34773) Matrix Spike (MS)
1202892937	327172003(CAPU-13-34778) Matrix Spike (MS)
1202892938	Laboratory Control Sample (LCS)

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.

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 (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following samples were selected for QC analysis: 327172001 (CAPU-13-34773) and 327172003 (CAPU-13-34778).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits.

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: 1202892934 (CAPU-13-34773). The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202892935 (CAPU-13-34778).

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

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1197089 1202892934 (CAPU-13-34773).

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:	1308998	**Method:**	EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
327622002	CALA-13-33431
1202894789	Method Blank (MB)
1202894792	327622002(CALA-13-33431) Sample Duplicate (DUP)
1202894795	327622002(CALA-13-33431) Post Spike (PS)
1202894796	Laboratory Control Sample (LCS)

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.

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 (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327622002 (CALA-13-33431).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The MS/PS recoveries for this sample set were within the required acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

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

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions
The samples in this SDG did not require dilutions.

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

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

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:	1308132	**Method:**	EPA 365.4 Phosphorus and Total in
Prep Batch :	1308131	**Method:**	EEPA 365.4 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 365.4:

Sample ID	Client ID
327622002	CALA-13-33431
1202892537	Method Blank (MB)
1202892538	Laboratory Control Sample (LCS)
1202892539	327626001(WST35-13-31938) Sample Duplicate (DUP)
1202892540	327626001(WST35-13-31938) 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.

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 (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327626001 (WST35-13-31938).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The sample concentration is more than four times the spike nominal concentration; therefore, the spike recovery is not applicable. 1202892540 (WST35-13-31938).

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

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

Holding Times
All samples in this SDG met the specified holding time.

Sample Preservation/Integrity
All the samples from this sample group met the preservation and integrity requirements of the method.

Sample Dilutions
The following samples in this sample group were diluted due to high concentration: 1202892539 (WST35-13-31938) and 1202892540 (WST35-13-31938).

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

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.

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, Total Dissolved**		
Analytical Batch:	1308070	**Method:**	EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
327622002	CALA-13-33431
1202892376	Method Blank (MB)
1202892380	Laboratory Control Sample (LCS)
1202892385	327527002(CALA-13-33435) 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# 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 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 (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327527002 (CALA-13-33435).

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.

Sample Aliquot
A sufficient amount of sample was provided by the client for analysis.

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.

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:	1310345	**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
327622002	CALA-13-33431
1202898292	Laboratory Control Sample (LCS)
1202898295	327622002(CALA-13-33431) Sample Duplicate (DUP)
1202898296	327622002(CALA-13-33431) 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# 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 Titration analysis was performed on a Manually operated buret.

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 327622002 (CALA-13-33431).

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

The MS/PS recovery for this sample set was within the required 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 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

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.

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.

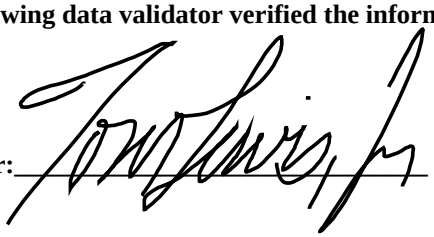
Certification Statement

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.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package.

The following data validator verified the information presented in this case narrative:

Reviewer:  **Date:** 11July13

Sample Data Summary

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

Certificate of Analysis Report
for

ARSL001 ARS International (63641-10)

Client SDG: 2013-951 GEL Work Order: 327622

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

** Analyte is a surrogate compound

E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria

E Concentration of the target analyte exceeds the instrument calibration range

H Analytical holding time was exceeded

J Value is estimated

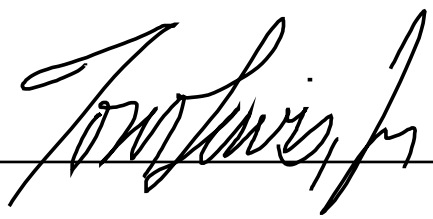
N Metals--The Matrix spike sample recovery is not within specified control limits

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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 Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Valerie Davis.

Reviewed by 

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

Certificate of Analysis

Report Date: July 9, 2013

Company :	Los Alamos National Laboratory
Address :	PO Box 1663 TA-03, SM271, Drop Pt. 02U, Rm111 Los Alamos, New Mexico 87545
Contact:	Mr. Keith Greene
Project:	LANL-WQH Water Samples

Client SDG: 2013-951

Client Sample ID:	CALA-13-33423	Project:	ESHL00210
Sample ID:	327622001	Client ID:	ARSL001
Matrix:	W		
Collect Date:	12-JUN-13 10:53		
Receive Date:	14-JUN-13		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.766	0.330	1.00	mg/L	1	TSM	06/21/13	1434	1309042	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	06/25/13	1119	1308288	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/24/13	1600	1308287

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

Notes:

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

Certificate of Analysis

Report Date: July 9, 2013

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL-WQH Water Samples
Client SDG: 2013-951

Client Sample ID: CALA-13-33431
Sample ID: 327622002
Matrix: W
Collect Date: 12-JUN-13 10:53
Receive Date: 14-JUN-13
Collector: Client
Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		412	1.00	1.00	umhos/cm	1	LXA1	07/01/13	1552	1311655	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 18.6C	H	7.15	0.010	0.100	SU	1	LXA1	06/14/13	1508	1308135	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	J	0.124	0.067	0.200	mg/L	1	MAR1	06/26/13	1607	1307985	3
Fluoride		0.452	0.033	0.100	mg/L	1					
Sulfate		16.4	0.133	0.400	mg/L	1					
Chloride		18.8	0.335	1.00	mg/L	5	MAR1	06/26/13	1638	1307985	4
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	06/19/13	1347	1308128	5
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite	J	0.0259	0.017	0.050	mg/L	1	KLP1	06/24/13	1514	1308998	6
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0382	0.017	0.050	mg/L	1	KLP1	06/18/13	1234	1308132	7
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		256	3.40	14.3	mg/L		LYG1	06/14/13	1452	1308070	8
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		157	0.725	1.00	mg/L		LXA1	06/25/13	1222	1310345	9
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/19/13	1230	1308126
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/17/13	1600	1308131

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

Certificate of Analysis

Report Date: July 9, 2013

Company :	Los Alamos National Laboratory		
Address :	PO Box 1663 TA-03, SM271, Drop Pt. 02U, Rm111 Los Alamos, New Mexico 87545		
Contact:	Mr. Keith Greene	Client SDG:	2013-951
Project:	LANL-WQH Water Samples		

Client Sample ID:	CALA-13-33431	Project:	ESHL00210
Sample ID:	327622002	Client ID:	ARSL001

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 120.1	
2	EPA 150.1	
3	EPA 300.0	
4	EPA 300.0	
5	EPA 350.1	
6	EPA 353.2	
7	EPA 365.4	
8	EPA 160.1	
9	EPA 310.1	

Notes:

Quality Control Summary

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

QC Summary

Report Date: July 9, 2013

Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico
Contact: **Mr. Keith Greene**

Workorder: **327622**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis												
Batch 1309042												
QC1202894930 327623001 DUP												
Total Organic Carbon Average		J	0.621	J	0.547	mg/L	12.7 ^		(+/-1.00)	TSM	06/21/13	15:42
QC1202894932 LCS												
Total Organic Carbon Average	10.0				9.79	mg/L		97.9	(85%-115%)		06/21/13	14:26
QC1202894929 MB												
Total Organic Carbon Average				U	ND	mg/L					06/21/13	14:17
QC1202894931 327623001 PS												
Total Organic Carbon Average	10.0	J	0.621		10.2	mg/L		96	(65%-120%)		06/21/13	16:02
Conductivity Analysis												
Batch 1311655												
QC1202901423 327622002 DUP												
Conductivity			412		408	umhos/cm	0.976		(0%-10%)	LXA1	07/01/13	15:53
QC1202901425 LCS												
Conductivity	1410				1440	umhos/cm		102	(95%-105%)		07/01/13	15:51
Electrode Analysis												
Batch 1308135												
QC1202892561 327623002 DUP												
pH		H	7.63	H	7.61	SU	0.262		(0%-10%)	LXA1	06/14/13	15:19
QC1202892559 LCS												
pH	7.00				7.00	SU		100	(99%-101%)		06/14/13	11:50
Ion Chromatography												
Batch 1307985												
QC1202892154 327396001 DUP												
Bromide		J	0.0689	U	ND	mg/L	N/A ^			MAR1	06/26/13	12:38
Chloride			3.02		3.03	mg/L	0.522		(0%-20%)			
Fluoride			0.247		0.259	mg/L	4.79 ^		(+/-0.100)			
Sulfate			3.99		3.91	mg/L	1.90		(0%-20%)			
QC1202892156 LCS												
Bromide	1.25				1.27	mg/L		102	(90%-110%)		06/26/13	11:38

QC Summary

Workorder: 327622

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1307985											
Chloride	5.00				4.79	mg/L		95.8	(90%-110%)	MAR1	06/26/13 11:38
Fluoride	2.50				2.57	mg/L		103	(90%-110%)		
Sulfate	10.0				10.1	mg/L		101	(90%-110%)		
QC1202892153 MB											
Bromide				U	ND	mg/L					06/26/13 11:08
Chloride				U	ND	mg/L					
Fluoride				U	ND	mg/L					
Sulfate				U	ND	mg/L					
QC1202892155 327396001 PS											
Bromide	1.25	J	0.0689		1.30	mg/L		98.6	(90%-110%)		06/26/13 13:08
Chloride	5.00		3.02		8.11	mg/L		102	(90%-110%)		
Fluoride	2.50		0.247		2.76	mg/L		101	(90%-110%)		
Sulfate	10.0		3.99		14.1	mg/L		101	(90%-110%)		
Nutrient Analysis											
Batch 1308128											
QC1202892528 327172002 DUP											
Nitrogen, Ammonia			0.137		0.090	mg/L	41.4 ^		(+/-0.050)	KLP1	06/19/13 13:16
QC1202892532 LCS											
Nitrogen, Ammonia	1.00				1.01	mg/L		101	(90%-110%)		06/19/13 13:14
QC1202892527 MB											
Nitrogen, Ammonia				J	0.0223	mg/L					06/19/13 13:14
QC1202892530 327172002 MS											
Nitrogen, Ammonia	1.00		0.137		1.22	mg/L		108	(90%-110%)		06/19/13 13:17
Batch 1308132											
QC1202892539 327626001 DUP											
Phosphorus, Total as P			16.6		16.8	mg/L	1.20		(0%-31%)	KLP1	06/18/13 13:24
QC1202892538 LCS											
Phosphorus, Total as P	1.00				1.02	mg/L		102	(76%-120%)		06/18/13 12:22

QC Summary

Workorder: 327622

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis												
Batch 1308132												
QC1202892537 MB												
Phosphorus, Total as P				U	ND	mg/L				KLP1	06/18/13	12:21
QC1202892540 327626001 MS												
Phosphorus, Total as P	1.00		16.6		73.2	mg/L		N/A	(62%-139%)		06/18/13	13:25
Batch 1308288												
QC1202892934 327172001 DUP												
Nitrogen, Total Kjeldahl			0.476		0.282	mg/L	51.2*^		(+/-0.100)	KLP1	06/25/13	11:04
QC1202892935 327172003 DUP												
Nitrogen, Total Kjeldahl		U	ND	J	0.0413	mg/L	N/A				06/25/13	11:07
QC1202892938 LCS												
Nitrogen, Total Kjeldahl	1.00				1.07	mg/L		107	(90%-110%)		06/25/13	11:02
QC1202892933 MB												
Nitrogen, Total Kjeldahl				U	ND	mg/L					06/25/13	11:02
QC1202892936 327172001 MS												
Nitrogen, Total Kjeldahl	1.00		0.476		1.38	mg/L		90.4	(90%-110%)		06/25/13	11:05
QC1202892937 327172003 MS												
Nitrogen, Total Kjeldahl	1.00	U	ND		1.00	mg/L		100	(90%-110%)		06/25/13	11:07
Batch 1308998												
QC1202894792 327622002 DUP												
Nitrogen, Nitrate/Nitrite		J	0.0259	J	0.0244	mg/L	5.96 ^		(+/-0.050)	KLP1	06/24/13	15:16
QC1202894796 LCS												
Nitrogen, Nitrate/Nitrite	1.00				1.04	mg/L		104	(90%-110%)		06/24/13	14:57
QC1202894789 MB												
Nitrogen, Nitrate/Nitrite				U	ND	mg/L					06/24/13	14:55
QC1202894795 327622002 PS												
Nitrogen, Nitrate/Nitrite	1.00	J	0.0259		1.06	mg/L		103	(90%-110%)		06/24/13	15:17
Solids Analysis												
Batch 1308070												
QC1202892385 327527002 DUP												
Total Dissolved Solids			194		199	mg/L	2.18		(0%-10%)	LYG1	06/14/13	13:23
QC1202892380 LCS												
Total Dissolved Solids	300				304	mg/L		101	(95%-105%)		06/14/13	13:23

QC Summary

Workorder: 327622

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Solids Analysis										
Batch 1308070										
QC1202892376 MB										
Total Dissolved Solids			J	7.14	mg/L				LYG1	06/14/13 13:23
Titration Analysis										
Batch 1310345										
QC1202898295 327622002 DUP										
Alkalinity, Total as CaCO3		157		157	mg/L	0.334		(0%-20%)	LXA1	06/25/13 14:21
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A				
QC1202898292 LCS										
Alkalinity, Total as CaCO3	50.0			52.4	mg/L		105	(90%-110%)		06/25/13 11:36
QC1202898296 327622002 MS										
Alkalinity, Total as CaCO3	50.0	157		207	mg/L		99.5	(80%-120%)		06/25/13 14:23

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, 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
h	Preparation or preservation holding time was exceeded

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QC Summary

Workorder: **327622**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
^ 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.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
14-JUN-13	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	EPA 150.1/SW-846 9040C	Liquid	BETT, CARE, ESHL, OLAB,
Batch ID:	**Sample Numbers:**		
1308135	See Below		

Potentially affected work order(s)(SDG): 327172(2013-926),327279(2013-934),327280(2013-935),327396(2013-940),327421,327444(EUI-9293),327456,327469,327527(2013-947),327622(2013-951),327623(2013-952)

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	DER Disposition:
1. Sample received out of holding: 327172 002,004 327279 002 327280 002,004 327396 001,004 327421 004,007,010 327444 001 327456 002,006,010 327469 001,002,003 327527 002 327622 002 327623 002	1. Sample received out of holding.
2.Container scanning event for custody missed: 327444001,327469001, 327469002, 327469003, 327622002, 327623002	2. Samples were not scanned to the analytical batch prior to analysis; however, they were in the analyst's custody at the time of analysis.

Originator's Name:

Lindsey Jensen 14-JUN-13

Data Validator/Group Leader:

Jamie Johnson 26-JUN-13

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
25-JUN-13	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 351.2, EPA 351.2 SC	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1308288	See below.		

Potentially affected work order(s)(SDG): 327172(2013-926),327279(2013-934),327280(2013-935),327394,327396(2013-940),327527(2013-947),327622(2013-951),327623(2013-952),327635,327704(2013-956),327705(2013-957),327706(2013-958),327707(2013-959)

Application Issues:

Failed RPD for DUP

Specification and Requirements Exception Description:	**DER Disposition:**
1. Failed RPD for DUP: QC 1202892934DUP	1. 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.

Originator's Name:

Kristen Parson 25-JUN-13

Data Validator/Group Leader:

Julia Hamilton 25-JUN-13

Radiological Analysis

Radiochemistry Case Narrative
ARS International (ARSL)
SDG 2013-951
Work Order 327622

Method/Analysis Information

Product:	**Alphaspec Am241 Liquid**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number:	1307462

Sample ID	Client ID
327622001	CALA-13-33423
1202890847	Method Blank (MB)
1202890848	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890849	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 24.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
Aliquots for samples 1202890847 (MB) and 1202890849 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

QC Information

All of the QC samples met the required acceptance limits.

CSU
The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

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

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
The MDCs are calculated using a blank population.

Blank Decision Level
The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Alphaspec Pu, Liquid**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1307464

Sample ID	Client ID
327622001	CALA-13-33423
1202890855	Method Blank (MB)
1202890856	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890857	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as

Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 24.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
Aliquots for samples 1202890855 (MB) and 1202890857 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: Refer to Data Exception Report (DER).

CSU
The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples 1202890855 (MB), 1202890856 (CAPU-13-34777) and 327622001 (CALA-13-33423) were recounted due to high MDCs. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1196391 was generated due to RDL less than MDA. 1. The duplicate, 1202890856, did not meet the Pu-239/240 detection limit. 1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The duplicate does meet the tracer yield requirement and has greater than 400 tracer counts. Reporting results.

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
The MDCs are calculated using a blank population.

Blank Decision Level
The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Alphaspec U, Liquid**
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1307467

Sample ID	Client ID
327622001	CALA-13-33423
1202890863	Method Blank (MB)
1202890864	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890865	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 24.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
Aliquots for samples 1202890863 (MB) and 1202890865 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

QC Information
All of the QC samples met the required acceptance limits.

CSU
The U-238 blank result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

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

Manual Integration
No manual integrations were performed on data in this batch.

Additional Comments
The MDCs are calculated using a blank population.

Blank Decision Level
The U-238 blank result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Gammaspec**
Analytical Method:	EPA 901.1
Analytical Batch Number:	1307967

Sample ID	Client ID
327622001	CALA-13-33423
1202892110	Method Blank (MB)
1202892111	327527001(CALA-13-33427) Sample Duplicate (DUP)
1202892112	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. The initial Calibrations were performed in July 2012 and August 2012.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 327527001 (CALA-13-33427). The QC was from ARSL work order 327527.

QC Information
All of the QC samples met the required acceptance limits.

CSU
The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

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

Additional Comments
Additional comments were not required for this sample set.

Blank Decision Level
The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**WSP-GrossA/B**
Analytical Method:	EPA 900.0/SW846 9310
Analytical Batch Number:	1308529

Sample ID	Client ID
327622001	CALA-13-33423
1202893584	Method Blank (MB)
1202893585	327623001(CAPU-13-34775) Sample Duplicate (DUP)
1202893586	327623001(CAPU-13-34775) Matrix Spike (MS)
1202893587	327623001(CAPU-13-34775) Matrix Spike Duplicate (MSD)
1202893588	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 16.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. The initial Calibration was performed in December 2012.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
Aliquots for samples 1202893584 (MB) and 1202893588 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 327623001 (CAPU-13-34775). The QC was from ARSL work order 327623.

QC Information
All of the QC samples met the required acceptance limits.

CSU
The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Sample 1202893586 (CAPU-13-34775) was recounted due to high recovery. The recount is reported. Sample 1202893585 (CAPU-13-34775) was recounted due to high relative percent difference/relative error ratio. The recount is reported.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating, especially to a dull red heat. For this sample set, the prepared planchet was counted for beta activity before being flamed. After flaming, the planchet was counted for alpha activity.

Miscellaneous Information:

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

Additional Comments
The matrix spike and matrix spike duplicate, 1202893586 (CAPU-13-34775) and 1202893587 (CAPU-13-34775), aliquots were reduced to conserve sample volume.

Blank Decision Level
The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**GFPC, Sr90, liquid**
Analytical Method:	EPA 905.0 Modified
Analytical Batch Number:	1308549

Sample ID	Client ID
327622001	CALA-13-33423
1202893647	Method Blank (MB)
1202893648	327622001(CALA-13-33423) Sample Duplicate (DUP)

1202893649	327622001(CALA-13-33423) Matrix Spike (MS)
1202893650	Laboratory Control Sample (LCS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 16.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. The initial Calibration was performed in March 2013.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
Aliquots for samples 1202893647 (MB) and 1202893650 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 327622001 (CALA-13-33423). The QC was from ARSL work order 327622.

QC Information
All of the QC samples met the required acceptance limits.

CSU
The blank 1202893647 (MB) result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Sample 327622001 (CALA-13-33423) was recounted due to a suspected false positive. The recount is reported.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Miscellaneous Information:

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

Additional Comments
The matrix spike, 1202893649 (CALA-13-33423), aliquot was reduced to conserve sample volume.

Blank Decision Level
The blank 1202893647 (MB) result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

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Qualifier Definition Report
for

ARSL001 ARS International (63641-10)

Client SDG: 2013-951 GEL Work Order: 327622

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a Tracer compound

U Analyte was analyzed for, but not detected above the MDL, MDA, 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: Heather McCarty **Name: Heather McCarty**

Date: 03 JUL 2013 **Title: Analyst II**

DATA EXCEPTION REPORT

Mo.Day Yr.	**Division:**	**Quality Criteria:**	**Type:**
21-JUN-13	Radiochemistry	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ALPHA SPECTROMETER	DOE EML HASL-300, Pu-11-RC Modified	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1307464	See Below		

Potentially affected work order(s)(SDG): 327396(2013-940),327527(2013-947),327622(2013-951),327623(2013-952)

Application Issues:

RDL less than MDA

Specification and Requirements Exception Description:	**DER Disposition:**
1. The duplicate, 1202890856, did not meet the Pu-239/240 detection limit.	1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The duplicate does meet the tracer yield requirement and has greater than 400 tracer counts. Reporting results.

Originator's Name:

Melanie Aycock 21-JUN-13

Data Validator/Group Leader:

Jessica Davis 27-JUN-13

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Report Date: July 3, 2013

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

Client Sample ID: CALA-13-33423
Sample ID: 327622001
Matrix: W
Collect Date: 12-JUN-13
Receive Date: 14-JUN-13
Collector: Client

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Am241 Liquid "As Received"														
Americium-241	U	0.00862	+/-0.00643	0.0437	0.0179	+/-0.00644	0.050	pCi/L		NXP2	06/19/13	1013	1307462	1
Alphaspec Pu, Liquid "As Received"														
Plutonium-238	U	0.00253	+/-0.0076	0.0237	0.00842	+/-0.0076	0.050	pCi/L		NXP2	06/20/13	1338	1307464	2
Plutonium-239/240	U	0.038	+/-0.0141	0.0499	0.0215	+/-0.0142	0.050	pCi/L						
Alphaspec U, Liquid "As Received"														
Uranium-234		0.610	+/-0.0472	0.0793	0.0348	+/-0.0626	1.00	pCi/L		NXP2	06/19/13	1013	1307467	3
Uranium-235/236	U	0.0178	+/-0.0126	0.0617	0.0248	+/-0.0127	1.00	pCi/L						
Uranium-238		0.440	+/-0.0408	0.0507	0.0204	+/-0.0505	0.500	pCi/L						
Rad Gamma Spec Analysis														
Gammaspec "As Received"														
Cesium-137	U	1.83	+/-1.02	3.86	1.79	+/-1.10	8.00	pCi/L		MXR1	06/21/13	1208	1307967	4
Cobalt-60	U	-1.47	+/-1.27	3.47	1.54	+/-1.32	8.00	pCi/L						
Neptunium-237	U	-3.35	+/-2.09	7.03	3.34	+/-2.23	10.0	pCi/L						
Potassium-40	U	1.34	+/-12.9	34.3	15.1	+/-12.9	10.0	pCi/L						
Sodium-22	U	0.129	+/-1.06	3.39	1.50	+/-1.06	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
GFPC, Sr90, liquid "As Received"														
Strontium-90	U	-0.0592	+/-0.130	0.490	0.220	+/-0.130	0.500	pCi/L		JXR1	06/30/13	1428	1308549	5
WSP-GrossA/B "As Received"														
Beta		3.32	+/-0.567	1.76	0.856	+/-0.636	3.00	pCi/L		DYT1	06/24/13	1848	1308529	6
Alpha	U	0.233	+/-0.512	2.44	0.696	+/-0.512	3.00	pCi/L		DYT1	06/26/13	1600	1308529	7

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	EPA 901.1
5	EPA 905.0 Modified
6	EPA 900.0/SW846 9310
7	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1307462	77.9	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1307464	64.7	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1307467	60.7	(50%-105%)

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Report Date: July 3, 2013

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

Client Sample ID: CALA-13-33423
Sample ID: 327622001

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	**Test**							**Batch ID**	**Recovery%**	**Acceptable Limits**				
Strontium Carrier	GFPC, Sr90, liquid "As Received"							1308549	73.7	(50%-105%)				

Notes:

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

Quality Control Data

QC Summary

Client : **Los Alamos National Laboratory**
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico

Contact: **Mr. Keith Greene**

Workorder: **327622**

Report Date: July 3, 2013

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1307462										
QC1202890848 327396002 DUP										
Americium-241	U	0.0117	U	0.00265	pCi/L	0.351		(0-1)	NXP2	06/19/1310:13
	Uncert:	+/-0.00826		+/-0.00458						
	TPU:	+/-0.00827		+/-0.00458						
**Americium-243 Tracer	2.62	1.98		2.19	pCi/L		83.5	(50%-105%)		
	Uncert:	+/-0.0869		+/-0.0829						
	TPU:	+/-0.143		+/-0.139						
QC1202890849 LCS										
Americium-241	1.41			1.27	pCi/L		89.9	(80%-120%)	NXP2	06/19/1310:13
	Uncert:			+/-0.0532						
	TPU:			+/-0.0762						
**Americium-243 Tracer	2.09			1.70	pCi/L		81.3	(50%-105%)		
	Uncert:			+/-0.0676						
	TPU:			+/-0.113						
QC1202890847 MB										
Americium-241			U	0.00	pCi/L				NXP2	06/19/1310:13
	Uncert:			+/-0.00594						
	TPU:			+/-0.00594						
**Americium-243 Tracer	2.09			1.75	pCi/L		83.5	(50%-105%)		
	Uncert:			+/-0.0659						
	TPU:			+/-0.110						
Batch 1307464										
QC1202890856 327396002 DUP										
Plutonium-238	U	-0.00222	U	-0.00932	pCi/L	0.329		(0-1)	NXP2	06/20/1313:38
	Uncert:	+/-0.00384		+/-0.00695						
	TPU:	+/-0.00384		+/-0.00695						
Plutonium-239/240	U	0.00222	U	0.0528	pCi/L	1.16		(0-1)		
	Uncert:	+/-0.00665		+/-0.0149						
	TPU:	+/-0.00666		+/-0.0151						
**Plutonium-242 Tracer	2.44	1.79		1.22	pCi/L		50	(50%-105%)		
	Uncert:	+/-0.0737		+/-0.0877						
	TPU:	+/-0.125		+/-0.142						
QC1202890857 LCS										
Plutonium-238			U	0.00818	pCi/L			(80%-120%)	NXP2	06/19/1310:13
	Uncert:			+/-0.00721						
	TPU:			+/-0.00722						
Plutonium-239/240	1.97			1.93	pCi/L		98.1	(80%-120%)		
	Uncert:			+/-0.0727						
	TPU:			+/-0.116						
**Plutonium-242 Tracer	1.95			1.25	pCi/L		64.2	(50%-105%)		
	Uncert:			+/-0.0731						
	TPU:			+/-0.117						
QC1202890855 MB										

QC Summary

Workorder: **327622**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1307464										
Plutonium-238			U	-0.00818	pCi/L				NXP2	06/20/1313:38
	Uncert:			+/-0.00646						
	TPU:			+/-0.00646						
Plutonium-239/240			U	0.00613	pCi/L					
	Uncert:			+/-0.00541						
	TPU:			+/-0.00541						
**Plutonium-242 Tracer	1.95			1.21	pCi/L		62.1	(50%-105%)		
	Uncert:			+/-0.0634						
	TPU:			+/-0.105						
Batch 1307467										
QC1202890864 327396002 DUP										
Uranium-234		0.570		0.560	pCi/L	0.041		(0-1)	NXP2	06/19/1310:13
	Uncert:	+/-0.0419		+/-0.0425						
	TPU:	+/-0.0561		+/-0.0563						
Uranium-235/236	U	0.0221	U	0.015	pCi/L	0.169		(0-1)		
	Uncert:	+/-0.0104		+/-0.0106						
	TPU:	+/-0.0105		+/-0.0106						
Uranium-238		0.301		0.360	pCi/L	0.385		(0-1)		
	Uncert:	+/-0.0303		+/-0.0333						
	TPU:	+/-0.0361		+/-0.0409						
**Uranium-232 Tracer	2.69	1.95		1.94	pCi/L		72.1	(50%-105%)		
	Uncert:	+/-0.0898		+/-0.0909						
	TPU:	+/-0.198		+/-0.199						
QC1202890865 LCS										
Uranium-234				2.74	pCi/L				NXP2	06/19/1310:13
	Uncert:			+/-0.0787						
	TPU:			+/-0.195						
Uranium-235/236				0.136	pCi/L					
	Uncert:			+/-0.0198						
	TPU:			+/-0.0217						
Uranium-238	2.70			2.87	pCi/L		106	(80%-120%)		
	Uncert:			+/-0.0804						
	TPU:			+/-0.203						
**Uranium-232 Tracer	2.15			1.66	pCi/L		76.8	(50%-105%)		
	Uncert:			+/-0.0701						
	TPU:			+/-0.157						
QC1202890863 MB										
Uranium-234			U	0.00	pCi/L				NXP2	06/19/1310:13
	Uncert:			+/-0.00567						
	TPU:			+/-0.00567						
Uranium-235/236			U	0.00	pCi/L					
	Uncert:			+/-0.00496						
	TPU:			+/-0.00496						
Uranium-238			U	0.016	pCi/L					
	Uncert:			+/-0.00802						
	TPU:			+/-0.00809						
**Uranium-232 Tracer	2.15			1.83	pCi/L		84.7	(50%-105%)		
	Uncert:			+/-0.0659						
				+/-0.153						

QC Summary

Workorder: **327622**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1307467										
	TPU:									
Rad Gamma Spec										
Batch 1307967										
QC1202892111 327527001 DUP										
Cesium-137	U	0.920	U	1.42	pCi/L	0.113		(0-1)	MXR1	06/23/1311:40
	Uncert:	+/-0.955		+/-1.25						
	TPU:	+/-0.979		+/-1.25						
Cobalt-60	U	-0.381	U	2.96	pCi/L	0.711		(0-1)		
	Uncert:	+/-0.885		+/-1.29						
	TPU:	+/-0.889		+/-1.46						
Neptunium-237	U	-2.36	U	1.66	pCi/L	0.452		(0-1)		
	Uncert:	+/-1.97		+/-2.37						
	TPU:	+/-2.04		+/-2.40						
Potassium-40	U	3.19	U	-11.3	pCi/L	0.212		(0-1)		
	Uncert:	+/-14.0		+/-19.9						
	TPU:	+/-14.0		+/-20.0						
Sodium-22	U	-1.58	U	2.06	pCi/L	0.867		(0-1)		
	Uncert:	+/-1.06		+/-0.977						
	TPU:	+/-1.12		+/-0.981						
QC1202892112 LCS										
Americium-241	2780			2720	pCi/L		97.7	(80%-120%)	MXR1	06/24/1312:10
	Uncert:			+/-104						
	TPU:			+/-189						
Cesium-137	6010			6020	pCi/L		100	(80%-120%)		
	Uncert:			+/-52.9						
	TPU:			+/-260						
Cobalt-60	5230			5310	pCi/L		102	(80%-120%)		
	Uncert:			+/-56.4						
	TPU:			+/-223						
Neptunium-237			U	21.2	pCi/L					
	Uncert:			+/-23.5						
	TPU:			+/-24.0						
Potassium-40			U	53.8	pCi/L					
	Uncert:			+/-40.2						
	TPU:			+/-42.2						
Sodium-22			U	-2.46	pCi/L					
	Uncert:			+/-6.50						
	TPU:			+/-6.52						
QC1202892110 MB										
Cesium-137			U	-1.84	pCi/L				MXR1	06/21/1312:18
	Uncert:			+/-1.54						
	TPU:			+/-1.60						
Cobalt-60			U	1.29	pCi/L					
	Uncert:			+/-1.02						
	TPU:			+/-1.06						
Neptunium-237			U	-0.00884	pCi/L					
	Uncert:			+/-1.91						
	TPU:			+/-1.91						

QC Summary

Workorder: **327622**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 1307967										
Potassium-40			U	-2.39	pCi/L					
Uncert:				+/-18.6						
TPU:				+/-18.6						
Sodium-22			U	-0.712	pCi/L					
Uncert:				+/-1.11						
TPU:				+/-1.12						
Rad Gas Flow										
Batch 1308529										
QC1202893585 327623001 DUP										
Alpha	U	-0.0322	U	0.431	pCi/L	0.231		(0-1)	DYT1	06/26/1317:21
Uncert:		+/-0.464		+/-0.539						
TPU:		+/-0.464		+/-0.540						
Beta	U	0.373	U	1.05	pCi/L	0.206		(0-1)		06/25/1317:45
Uncert:		+/-0.753		+/-0.878						
TPU:		+/-0.754		+/-0.882						
QC1202893588 LCS										
Alpha	12.3			13.7	pCi/L		111	(80%-120%)	DYT1	06/26/1317:41
Uncert:				+/-0.643						
TPU:				+/-1.43						
Beta	48.5			54.5	pCi/L		112	(80%-120%)		06/24/1316:29
Uncert:				+/-0.952						
TPU:				+/-4.60						
QC1202893584 MB										
Alpha			U	-0.0731	pCi/L				DYT1	06/26/1317:21
Uncert:				+/-0.0167						
TPU:				+/-0.017						
Beta			U	-0.104	pCi/L					06/24/1318:48
Uncert:				+/-0.0438						
TPU:				+/-0.0438						
QC1202893586 327623001 MS										
Alpha	82.3 U	-0.0322		77.5	pCi/L		94.2	(75%-125%)	DYT1	06/27/1312:54
Uncert:		+/-0.464		+/-4.18						
TPU:		+/-0.464		+/-8.01						
Beta	1940 U	0.373		2190	pCi/L		113	(75%-125%)		06/24/1316:29
Uncert:		+/-0.753		+/-38.7						
TPU:		+/-0.754		+/-186						
QC1202893587 327623001 MSD										
Alpha	82.3 U	-0.0322		90.0	pCi/L	0.370	109	(0-1)	DYT1	06/26/1317:21
Uncert:		+/-0.464		+/-4.76						
TPU:		+/-0.464		+/-8.88						
Beta	1940 U	0.373		2290	pCi/L	0.129	118	(0-1)		06/24/1316:29
Uncert:		+/-0.753		+/-39.3						
TPU:		+/-0.754		+/-194						
Batch 1308549										
QC1202893648 327622001 DUP										
Strontium-90	U	-0.0592	U	0.105	pCi/L	0.312		(0-1)	JXR1	06/27/1308:28
Uncert:		+/-0.130		+/-0.132						
TPU:		+/-0.130		+/-0.132						

QC Summary

Workorder: 327622

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1308549										
**Strontium Carrier	8.55	6.30		6.80	mg		79.5	(50%-105%)		
QC1202893650 LCS										
Strontium-90	24.2			23.8	pCi/L		98.2	(80%-120%)	JXR1	06/27/1308:28
	Uncert:			+/-0.699						
	TPU:			+/-2.15						
**Strontium Carrier	8.55			6.90	mg		80.7	(50%-105%)		
QC1202893647 MB										
Strontium-90			U	0.124	pCi/L				JXR1	06/27/1308:28
	Uncert:			+/-0.0737						
	TPU:			+/-0.0744						
**Strontium Carrier	8.55			6.80	mg		79.5	(50%-105%)		
QC1202893649 327622001 MS										
Strontium-90	242 U	-0.0592		244	pCi/L		101	(75%-125%)	JXR1	06/27/1308:28
	Uncert:	+/-0.130		+/-6.81						
	TPU:	+/-0.130		+/-20.7						
**Strontium Carrier	8.55	6.30		7.10	mg		83	(50%-105%)		

Notes:

TPU and Counting Uncertainty are calculated at the 68% confidence level (1-sigma).

The Qualifiers in this report are defined as follows:

**	Analyte is a Tracer compound
<	Result is less than value reported
>	Result is greater than value reported
BD	Results are either below the MDC or tracer recovery is low
FA	Failed analysis.
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	REMP Result > MDC/CL and < RDL
N/A	RPD or %Recovery limits do not apply.
N1	See case narrative
ND	Analyte concentration is not detected above the detection limit
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

QC Summary

Workorder: **327622**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time

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.
** Indicates analyte is a surrogate/tracer compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.