General Engineering Laboratories, Inc., Charleston, SC.

2040 Savage Rd
Charleston SC 29407

Chain of Custody/Analysis Request

ADEP

COC/Lab Request #: 2014-2960

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: Sample Quantitation Limit

Special Instructions:

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8011-EDB_DBCP	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-8310-PAH	WSP-8321A-NMED HEXP	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-8081A-HCB	WSP-LL-8151A-PCP	WSP-LL-8260B	WSP-LL-8270C	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC			
CAWA-14-54782	Mar 7 2014	09:52	W	1	2	2	3	2	3		1		1	2	2	2	1		1	1			
CAWA-14-54784	Mar 7 2014	09:52	W							1		1						1					
CAWA-14-54780	Mar 7 2014	09:52	W		2	2																	
CAWA-14-54783	Mar 7 2014	12:08	W	1	2	2	3	2	3		1		1	2	2	2	1		1	1			
CAWA-14-54785	Mar 7 2014	12:08	W							1		1						1					
CAWA-14-54781	Mar 7 2014	12:08	W		2	2																	

Special Instructions:

Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
	Melissa Martinez	3/10/14 3:40			
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: 4562 **EVENT NAME:** Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54780 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	Q2
TIME COLLECTED (HH:MM):		0952	MEDIA:	UA	↓
PRS ID:		CR	SAMPLE TECH CODE:	UA	MP
LOCATION ID:	R-27	↓	FIELD PREP:	UF	CR
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT:	SINGLE COMPLETION	↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ 3/6/14		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ 3/6/14		
~~WSP-LL-8260B~~		40 ML SEPTUM AMBER GLASS	~~2~~	~~HCL~~ 3/6/14		

SAMPLE COMMENTS: None

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L ~~Flow (in gpm)~~ _____ GPM Oxidation-Reduction Potential _____ mV

pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C

Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shenda

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan Green	3/7/14 1400	K. Grace	3/7/14 2:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562 **EVENT NAME:** Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54781 **WORK ORDER:**

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	QC
TIME COLLECTED (HH:MM):		1208	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	R-27i		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-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ 3/6/14	Y	NA
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	~~2~~ 1	~~HCL~~ 3/6/14		
	~~WSP-LL-8260B~~	~~40 ML SEPTUM AMBER GLASS~~	~~2~~	~~HCL~~	~~3/6/14~~	

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM ~~Oxidation-Reduction Potential~~ _____ ~~mV~~

pH _____ SU Specific Conductance _____ uS/cm Temperature _____ ~~deg C~~

Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shands

RELINQUISHED BY	Date/Time	RECEIVED BY	Date/Time
(Printed Name) M. Shands (Signature)	3/7/14 1406	(Printed Name) K. Green (Signature)	3/7/14 2:06
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY** (Printed Name) (Signature)	**Date/Time**

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562

EVENT NAME: Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54782

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		0952	MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-27		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	~~HCL~~ JS 2/28/14 $Na_2S_2O_3$		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 1	~~ICE~~ KM 3/6/14		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~2~~ 1	~~ICE~~ KM 3/6/14		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562 **EVENT NAME:** Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54782 **WORK ORDER:** NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NP	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	Y	VOA
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Samples collected within 50 ft of diesel generator

LOCATION COMMENTS: at

FIELD PARAMETERS:

Dissolved Oxygen 7.03 mg/L Flow (in gpm) 3.75 GPM Oxidation-Reduction Potential 102.1 mV

pH 7.87 SU Specific Conductance 122 uS/cm Temperature 18.44 deg C

Turbidity 0.6 NTU

COLLECTED BY (PRINT) M Shendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Meyn Shendo	3/7/14 1400	K. Green	3/7/14 2:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562

EVENT NAME: Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54783

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1208	MEDIA:	UA	
PRS ID:		OK	SAMPLE TECH CODE:	UA	~~GSM~~ RSP
LOCATION ID:	R-27i		FIELD PREP:	UF	
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
PORT:	SINGLE COMPLETION		SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	~~HCL~~ AS 2/28/14 $Na_2S_2O_3$		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	1 LITER AMBER GLASS	~~2~~ 3	~~ICE~~ 3/6/14 ~~2~~ 3/6/14		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	~~2~~ 3	~~ICE~~ 3/6/14 ~~2~~ 3/6/14		
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-GrossA/B	1 LITER POLY	1	HNO3		
	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE		
	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE		

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562 **EVENT NAME:** Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54783 **WORK ORDER:** NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.84 mg/L Flow (in gpm) 0.6 GPM Oxidation-Reduction Potential 170.6 mV

pH 6.94 SU Specific Conductance 106 uS/cm Temperature 13.19 deg C

Turbidity 0.3 NTU

COLLECTED BY (PRINT) M. Shonda

RELINQUISHED BY **(Printed Name)** Megan Green **(Signature)**	**Date/Time** 3/7/14 1400	**RECEIVED BY** **(Printed Name)** K. Green **(Signature)**	**Date/Time** 3/7/14 2:00
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562

EVENT NAME: Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54784

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		0952	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-27	↓	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-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV

pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C

Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shendo

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
M. Gallegos	3/7/14 1400	K. Greene	3/7/14 2:00
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4562 **EVENT NAME:** Water (MDA AB Monitoring) Q2 MY2014 Sampling Event

SAMPLE ID: CAWA-14-54785 **WORK ORDER:** NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		03/07/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1208	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	~~NA~~ RSP
LOCATION ID:	R-27i	↓	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-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NA

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV

pH _____ SU Specific Conductance _____ uS/cm ~~Temperature~~ _____ deg C

Turbidity _____ NTU

COLLECTED BY (PRINT) M. Shenda

RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time
Megan [illegible]	3/7/14 1400	K. Greene	3/7/14 2100
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

Report Date 02/27/2014

DATA VALIDATION REPORT

Chain Of Custody No. 2014-2960

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
344332	EPA:120.1	2				
344332	EPA:150.1	2				
344332	EPA:160.1	2				
344332	EPA:245.2	4				
344332	EPA:300.0	2				
344332	EPA:310.1	2				
344332	EPA:335.4	2				
344332	EPA:350.1	2				
344332	EPA:351.2	2				
344332	EPA:353.2	2				
344332	EPA:365.4	2				
344332	EPA:900	2				
344332	EPA:901.1	2				
344332	EPA:905.0	2				
344332	HASL-300:AM-241	2				
344332	HASL-300:ISOPU	2				
344332	HASL-300:ISOU	2				
344332	SM:A2340B	2				
344332	SW-846:6010B	2				
344332	SW-846:6020	2				
344332	SW-846:6850	2				
344332	SW-846:8011	2		2		
344332	SW-846:8081A	2				
344332	SW-846:8151A	2				
344332	SW-846:8260B	2		2		
344332	SW-846:8270C	2				
344332	SW-846:8310	2				
344332	SW-846:8321A_MOD	2				
344332	SW-846:9060	2				

DATA VALIDATION REPORT

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
344332	EPA:120.1	1375626	1375626	2										1				1			
344332	EPA:150.1	1372322	1372322	2										1				1			
344332	EPA:160.1	1371765	1371765	2					1					1				2			
344332	EPA:245.2	1375114	1375113	3					1					1				1			
344332	EPA:245.2	1375404	1375403	1					1					1				2			
344332	EPA:300.0	1371922	1371922	2					1					1				2			
344332	EPA:310.1	1372687	1372687	2					1					1	1			1			
344332	EPA:335.4	1372104	1372103	2					1					1				1			
344332	EPA:350.1	1372119	1372118	2					1					1				1			
344332	EPA:351.2	1373249	1373248	2					1					1				1			
344332	EPA:353.2	1372110	1372110	2					1					1				1			
344332	EPA:365.4	1373244	1373241	2					1					1				1			
344332	EPA:900	1374043	1374043	2					1					1				1			
344332	EPA:901.1	1372049	1372049	2					1					1				1			
344332	EPA:905.0	1374041	1374041	2					1					1				1			
344332	HASL-300:AM-241	1371824	1371824	2					1					1				1			
344332	HASL-300:ISOPU	1371825	1371825	2					1					1				1			
344332	HASL-300:ISOU	1371826	1371826	2					1					1				1			
344332	SM:A2340B	1377798	1377798	2																	
344332	SW-846:6010B	1372413	1372412	2					1					1				1			
344332	SW-846:6020	1372024	1372023	2					1					1				1			
344332	SW-846:6850	1372838	1372837	2					1					1							
344332	SW-846:8011	1371932	1371931	2		2			1					1	1						
344332	SW-846:8081A	1372108	1372105	2					1					1	1						
344332	SW-846:8151A	1371877	1371876	2					1					1	1						
344332	SW-846:8260B	1374437	1374437	2		2			2					4							
344332	SW-846:8270C	1372003	1372002	2					1					1							
344332	SW-846:8310	1372230	1372229	2					1					1	1						
344332	SW-846:8321A_MOD	1372044	1372042	2					1					1							
344332	SW-846:9060	1373397	1373397	2					1					1				1			

DATA VALIDATION REPORT

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAWA-14-54768	1203057549	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203057547	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-14-54759	1203049844	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203049842	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAAN-14-54791	1203048355	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-14-54707	1203048572	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203048356	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203048354	MB	1	0	0	0
EPA:245.2	INORGANIC	CACV-14-49264	1203056172	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54749	1203056954	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54782	1203056957	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54782	344332004	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54783	344332013	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:245.2	INORGANIC	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203056171	LCS	0	0	1	0
EPA:245.2	INORGANIC	LCS	1203056953	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203056170	MB	1	0	0	0
EPA:245.2	INORGANIC	MB	1203056952	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-14-54761	1203052102	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-14-54785	1203048736	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203048738	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203048735	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAAN-14-54791	1203051077	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203050682	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCSD	1203050683	LCSD	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203050681	MB	2	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-14-54733	1203049221	DUP	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:335.4	GENERAL CHEMISTRY	CAWA-14-54782	344332004	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAWA-14-54783	344332013	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203049225	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203049220	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-14-54768	1203049283	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203049282	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203049281	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-14-54740	1203051779	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-14-54782	344332004	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-14-54783	344332013	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203051778	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203051777	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-14-54753	1203049256	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203049259	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203049254	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAAN-14-54790	1203051762	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54784	344332007	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54785	344332016	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203051761	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203051760	MB	1	0	0	0
EPA:900	RAD	CAWA-14-54704	1203053745	DUP	2	0	0	0
EPA:900	RAD	CAWA-14-54782	344332004	REG	2	0	0	0
EPA:900	RAD	CAWA-14-54783	344332013	REG	2	0	0	0
EPA:900	RAD	LCS	1203053748	LCS	0	0	2	0
EPA:900	RAD	MB	1203053744	MB	2	0	0	0
EPA:901.1	RAD	CAWA-14-54782	1203049050	DUP	5	0	0	0
EPA:901.1	RAD	CAWA-14-54782	344332004	REG	5	0	0	0
EPA:901.1	RAD	CAWA-14-54783	344332013	REG	5	0	0	0
EPA:901.1	RAD	LCS	1203049051	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203049049	MB	5	0	0	0
EPA:905.0	RAD	CAPA-14-54777	1203053725	DUP	1	0	0	0
EPA:905.0	RAD	CAWA-14-54782	344332004	REG	1	0	0	0
EPA:905.0	RAD	CAWA-14-54783	344332013	REG	1	0	0	0
EPA:905.0	RAD	LCS	1203053727	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203053724	MB	1	0	0	0
HASL-300:AM-241	RAD	CAWA-14-54741	1203048494	DUP	1	0	0	0

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Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
HASL-300:AM-241	RAD	CAWA-14-54782	344332004	REG	1	0	0	0
HASL-300:AM-241	RAD	CAWA-14-54783	344332013	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203048495	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203048493	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAWA-14-54741	1203048497	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAWA-14-54782	344332004	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAWA-14-54783	344332013	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203048498	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203048496	MB	2	0	0	0
HASL-300:ISOU	RAD	CAWA-14-54741	1203048500	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAWA-14-54782	344332004	REG	3	0	0	0
HASL-300:ISOU	RAD	CAWA-14-54783	344332013	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203048501	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203048499	MB	3	0	0	0
SM:A2340B	INORGANIC	CAWA-14-54784	344332007	REG	1	0	0	0
SM:A2340B	INORGANIC	CAWA-14-54785	344332016	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAWA-14-54768	1203050009	DUP	17	0	0	0
SW-846:6010B	INORGANIC	CAWA-14-54784	344332007	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAWA-14-54785	344332016	REG	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1203050008	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1203050007	MB	17	0	0	0
SW-846:6020	INORGANIC	CACV-14-49264	1203048999	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAWA-14-54784	344332007	REG	11	0	0	0
SW-846:6020	INORGANIC	CAWA-14-54785	344332016	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203048998	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203048997	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-14-54784	344332007	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-14-54785	344332016	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203051047	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203051046	MB	1	0	0	0
SW-846:8011	VOC	CAWA-14-54780	344332008	FTB	2	1	0	0
SW-846:8011	VOC	CAWA-14-54781	344332017	FTB	2	1	0	0
SW-846:8011	VOC	CAWA-14-54782	344332001	REG	2	1	0	0
SW-846:8011	VOC	CAWA-14-54783	344332010	REG	2	1	0	0
SW-846:8011	VOC	LCS	1203048764	LCS	0	1	2	0
SW-846:8011	VOC	LCSD	1203048765	LCSD	0	1	2	0
SW-846:8011	VOC	MB	1203048763	MB	2	1	0	0
SW-846:8081A	PESTPCB	CAWA-14-54782	344332005	REG	1	2	0	0
SW-846:8081A	PESTPCB	CAWA-14-54783	344332014	REG	1	2	0	0
SW-846:8081A	PESTPCB	LCS	1203049233	LCS	0	2	1	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8081A	PESTPCB	LCSD	1203049234	LCSD	0	2	1	0
SW-846:8081A	PESTPCB	MB	1203049231	MB	1	2	0	0
SW-846:8151A	HERB	CAWA-14-54782	344332006	REG	1	1	0	0
SW-846:8151A	HERB	CAWA-14-54783	344332015	REG	1	1	0	0
SW-846:8151A	HERB	LCS	1203048600	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203048894	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203048599	MB	1	1	0	0
SW-846:8260B	VOC	CAWA-14-54780	344332009	FTB	78	3	0	0
SW-846:8260B	VOC	CAWA-14-54781	344332018	FTB	78	3	0	0
SW-846:8260B	VOC	CAWA-14-54782	344332004	REG	78	3	0	0
SW-846:8260B	VOC	CAWA-14-54783	344332013	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203054619	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203054620	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203064037	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203064038	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203054616	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203064036	MB	78	3	0	0
SW-846:8270C	SVOC	CAWA-14-54782	344332004	REG	60	6	0	0
SW-846:8270C	SVOC	CAWA-14-54783	344332013	REG	60	6	0	0
SW-846:8270C	SVOC	LCS	1203048938	LCS	0	6	56	0
SW-846:8270C	SVOC	MB	1203048937	MB	60	6	0	0
SW-846:8310	SVOC	CAWA-14-54782	344332002	REG	18	1	0	0
SW-846:8310	SVOC	CAWA-14-54783	344332011	REG	18	1	0	0
SW-846:8310	SVOC	LCS	1203049583	LCS	0	1	18	0
SW-846:8310	SVOC	LCSD	1203049586	LCSD	0	1	18	0
SW-846:8310	SVOC	MB	1203049582	MB	18	1	0	0
SW-846:8321A_MOD	LCMS/MS HIGH	CAWA-14-54782	344332003	REG	20	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH	CAWA-14-54783	344332012	REG	20	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH	LCS	1203049045	LCS	0	2	20	0
SW-846:8321A_MOD	LCMS/MS HIGH	MB	1203049042	MB	20	2	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-14-54733	1203052109	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-14-54782	344332004	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAWA-14-54783	344332013	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203052113	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203052108	MB	1	0	0	0

3. Are any analytes missing?

No.

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4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203048997	METHOD BLANK	SW-846:6020	W	Uranium	.088	J	ug/L	0.200
MB	1203050007	METHOD BLANK	SW-846:6010B	W	Iron	83.7	J	ug/L	100
MB	1203050007	METHOD BLANK	SW-846:6010B	W	Potassium	50.5	J	ug/L	150

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAWA-14-54784	1203050007	METHOD BLANK	SW-846:6010B	Iron	83.7	ug/L	80.1	J	100	Y	5		Y
CAWA-14-54785	1203050007	METHOD BLANK	SW-846:6010B	Iron	83.7	ug/L	90.3	J	100	Y	5		Y
CAWA-14-54785	1203048997	METHOD BLANK	SW-846:6020	Uranium	.088	ug/L	.25		0.200	Y	5		Y

6. Any surrogate recoveries outside the control limits?

Field Sample ID	Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Spike Recovery	Upper Limit	Lower Limit	Rejection Limit
LCSD	1203049234	SW-846:8081A	4cmx	1372108	03-13-2014	27	106	36	10
LCSD	1203049234	SW-846:8081A	PCB-209	1372108	03-13-2014	31	124	41	10
CAWA-14-54781	344332018	SW-846:8260B	Bromofluorobenzene[4-]	1374437	03-22-2014	121	120	80	10

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

DATA VALIDATION REPORT

No.

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

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203049233	1203049234	SW-846:8081A	Hexachlorobenzene	1372105	03-13-2014	W	73	26	150	50		10	95	30
1203054619		SW-846:8260B	Vinyl acetate	1374437	03-21-2014	W	64		130	78		10		
1203064037		SW-846:8260B	Diethyl Ether	1374437	03-22-2014	W	72		120	73		10		
1203064037		SW-846:8260B	Vinyl acetate	1374437	03-22-2014	W	64		130	78		10		
1203049583	1203049586	SW-846:8310	Acenaphthene	1372229	03-17-2014	W	71	57	107	53		10	23	20
1203049583	1203049586	SW-846:8310	Acenaphthylene	1372229	03-17-2014	W	68	52	100	52		10	25	20
1203049583	1203049586	SW-846:8310	Methylnaphthalene[1-]	1372229	03-17-2014	W	61	44	96	55		10	31	20
1203049583	1203049586	SW-846:8310	Methylnaphthalene[2-]	1372229	03-17-2014	W	66	50	91	50		10	27	20
1203049583	1203049586	SW-846:8310	Naphthalene	1372229	03-17-2014	W	57	42	108	54		10	31	26

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

DATA VALIDATION REPORT

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-27	2014-2960	CAWA-14-54780	FTB	INIT	VOC	SW-846:8260B	Diethyl Ether	UH	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27	2014-2960	CAWA-14-54780	FTB	INIT	VOC	SW-846:8260B	Vinyl acetate	UH	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27i	2014-2960	CAWA-14-54781	FTB	INIT	VOC	SW-846:8260B	Diethyl Ether	UH	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27i	2014-2960	CAWA-14-54781	FTB	INIT	VOC	SW-846:8260B	Vinyl acetate	UH	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	0	pCi/L	0	pCi/L	0.0526	0.00643	W	03/07/2014		1371824	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	.266	pCi/L	.266	pCi/L	5.08	1.66	W	03/07/2014		1372049	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	.699	pCi/L	.699	pCi/L	5.04	1.26	W	03/07/2014		1372049	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	VOC	SW-846:8260B	Diethyl Ether	UH	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	-.949	pCi/L	-.949	pCi/L	2.51	0.521	W	03/07/2014		1374043	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N	-1.04	pCi/L	-1.04	pCi/L	1.90	0.553	W	03/07/2014		1374043	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	PESTPCB	SW-846:8081A	Hexachlorobenzene	U	UJ	P12a	N	0.020	ug/L	0.020	ug/L			W	03/07/2014		1372108	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	SVOC	SW-846:8310	Methylnaphthalene[1-]	U	UJ	SV12a	N	0.526	ug/L	0.526	ug/L			W	03/07/2014		1372230	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	SVOC	SW-846:8310	Naphthalene	U	UJ	SV12a	N	0.526	ug/L	0.526	ug/L			W	03/07/2014		1372230	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-2.66	pCi/L	-2.66	pCi/L	9.51	2.84	W	03/07/2014		1372049	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00601	pCi/L	-.00601	pCi/L	0.0387	0.00601	W	03/07/2014		1371825	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	-.00601	pCi/L	-.00601	pCi/L	0.0882	0.0085	W	03/07/2014		1371825	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	-26.8	pCi/L	-26.8	pCi/L	53.7	14.5	W	03/07/2014		1372049	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-.295	pCi/L	-.295	pCi/L	5.22	1.41	W	03/07/2014		1372049	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	-.175	pCi/L	-.175	pCi/L	0.485	0.126	W	03/07/2014		1374041	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	-.00654	pCi/L	-.00654	pCi/L	0.0418	0.0103	W	03/07/2014		1371826	VAL	Y
R-27	2014-2960	CAWA-14-54782	REG	INIT	VOC	SW-846:8260B	Vinyl acetate	UH	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	-.00248	pCi/L	-.00248	pCi/L	0.0496	0.00656	W	03/07/2014		1371824	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	-2.87	pCi/L	-2.87	pCi/L	5.42	1.77	W	03/07/2014		1372049	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	-1.36	pCi/L	-1.36	pCi/L	5.08	1.42	W	03/07/2014		1372049	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	VOC	SW-846:8260B	Diethyl Ether	UH	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	-.658	pCi/L	-.658	pCi/L	2.90	0.643	W	03/07/2014		1374043	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N	.633	pCi/L	.633	pCi/L	1.16	0.360	W	03/07/2014		1374043	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	PESTPCB	SW-846:8081A	Hexachlorobenzene	U	UJ	P12a	N	0.0204	ug/L	0.0204	ug/L			W	03/07/2014		1372108	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	SVOC	SW-846:8310	Methylnaphthalene[1-]	U	UJ	SV12a	N	0.532	ug/L	0.532	ug/L			W	03/07/2014		1372230	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	SVOC	SW-846:8310	Naphthalene	U	UJ	SV12a	N	0.532	ug/L	0.532	ug/L			W	03/07/2014		1372230	VAL	Y

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Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-6.1	pCi/L	-6.1	pCi/L	10.1	3.04	W	03/07/2014		1372049	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00565	pCi/L	-.00565	pCi/L	0.0364	0.00692	W	03/07/2014		1371825	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.00848	pCi/L	.00848	pCi/L	0.083	0.0185	W	03/07/2014		1371825	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	50	pCi/L	50	pCi/L	55.6	23.2	W	03/07/2014		1372049	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	.297	pCi/L	.297	pCi/L	6.05	1.62	W	03/07/2014		1372049	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	-.252	pCi/L	-.252	pCi/L	0.438	0.0884	W	03/07/2014		1374041	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	.0179	pCi/L	.0179	pCi/L	0.0458	0.0107	W	03/07/2014		1371826	VAL	Y
R-27i	2014-2960	CAWA-14-54783	REG	INIT	VOC	SW-846:8260B	Vinyl acetate	UH	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/07/2014		1374437	VAL	Y
R-27	2014-2960	CAWA-14-54784	REG	INIT	INORGANIC	SW-846:6010B	Iron	J	U	I4	N	80.1	ug/L	80.1	ug/L			W	03/07/2014		1372413	VAL	Y
R-27i	2014-2960	CAWA-14-54785	REG	INIT	INORGANIC	SW-846:6010B	Iron	J	U	I4	N	90.3	ug/L	90.3	ug/L			W	03/07/2014		1372413	VAL	Y
R-27i	2014-2960	CAWA-14-54785	REG	INIT	INORGANIC	SW-846:6020	Uranium		U	I4	N	.25	ug/L	.25	ug/L			W	03/07/2014		1372024	VAL	Y

Reason Code	Description
I4	the sample result is =<5x the concentration of related analyte in the method blank.
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualifiy the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
P12a	The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.
R5	Analyte is not detected because the amount reported is less than the MDC.
SV12a	The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.
U_LAB	The analytical laboratory qualified the analyte as not detected.
V12a	The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-14-54780	R-27	FTB	SW-846:8011	0	2
CAWA-14-54780	R-27	FTB	SW-846:8260B	0	78
CAWA-14-54781	R-27i	FTB	SW-846:8011	0	2

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-14-54781	R-27i	FTB	SW-846:8260B	0	78
CAWA-14-54782	R-27	REG	EPA:245.2	0	1
CAWA-14-54782	R-27	REG	EPA:335.4	0	1
CAWA-14-54782	R-27	REG	EPA:351.2	0	1
CAWA-14-54782	R-27	REG	EPA:900	0	2
CAWA-14-54782	R-27	REG	EPA:901.1	0	5
CAWA-14-54782	R-27	REG	EPA:905.0	0	1
CAWA-14-54782	R-27	REG	HASL-300:AM-241	0	1
CAWA-14-54782	R-27	REG	HASL-300:ISOPU	0	2
CAWA-14-54782	R-27	REG	HASL-300:ISOU	0	3
CAWA-14-54782	R-27	REG	SW-846:8011	0	2
CAWA-14-54782	R-27	REG	SW-846:8081A	0	1
CAWA-14-54782	R-27	REG	SW-846:8151A	0	1
CAWA-14-54782	R-27	REG	SW-846:8260B	0	78
CAWA-14-54782	R-27	REG	SW-846:8270C	0	60
CAWA-14-54782	R-27	REG	SW-846:8310	0	18
CAWA-14-54782	R-27	REG	SW-846:8321A_MOD	0	20
CAWA-14-54782	R-27	REG	SW-846:9060	0	1
CAWA-14-54783	R-27i	REG	EPA:245.2	0	1
CAWA-14-54783	R-27i	REG	EPA:335.4	0	1
CAWA-14-54783	R-27i	REG	EPA:351.2	0	1
CAWA-14-54783	R-27i	REG	EPA:900	0	2
CAWA-14-54783	R-27i	REG	EPA:901.1	0	5
CAWA-14-54783	R-27i	REG	EPA:905.0	0	1
CAWA-14-54783	R-27i	REG	HASL-300:AM-241	0	1
CAWA-14-54783	R-27i	REG	HASL-300:ISOPU	0	2
CAWA-14-54783	R-27i	REG	HASL-300:ISOU	0	3
CAWA-14-54783	R-27i	REG	SW-846:8011	0	2
CAWA-14-54783	R-27i	REG	SW-846:8081A	0	1
CAWA-14-54783	R-27i	REG	SW-846:8151A	0	1
CAWA-14-54783	R-27i	REG	SW-846:8260B	0	78
CAWA-14-54783	R-27i	REG	SW-846:8270C	0	60
CAWA-14-54783	R-27i	REG	SW-846:8310	0	18
CAWA-14-54783	R-27i	REG	SW-846:8321A_MOD	0	20
CAWA-14-54783	R-27i	REG	SW-846:9060	0	1
CAWA-14-54784	R-27	REG	EPA:120.1	0	1
CAWA-14-54784	R-27	REG	EPA:150.1	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-14-54784	R-27	REG	EPA:160.1	0	1
CAWA-14-54784	R-27	REG	EPA:245.2	0	1
CAWA-14-54784	R-27	REG	EPA:300.0	0	4
CAWA-14-54784	R-27	REG	EPA:310.1	0	2
CAWA-14-54784	R-27	REG	EPA:350.1	0	1
CAWA-14-54784	R-27	REG	EPA:353.2	0	1
CAWA-14-54784	R-27	REG	EPA:365.4	0	1
CAWA-14-54784	R-27	REG	SM:A2340B	0	1
CAWA-14-54784	R-27	REG	SW-846:6010B	0	17
CAWA-14-54784	R-27	REG	SW-846:6020	0	11
CAWA-14-54784	R-27	REG	SW-846:6850	0	1
CAWA-14-54785	R-27i	REG	EPA:120.1	0	1
CAWA-14-54785	R-27i	REG	EPA:150.1	0	1
CAWA-14-54785	R-27i	REG	EPA:160.1	0	1
CAWA-14-54785	R-27i	REG	EPA:245.2	0	1
CAWA-14-54785	R-27i	REG	EPA:300.0	0	4
CAWA-14-54785	R-27i	REG	EPA:310.1	0	2
CAWA-14-54785	R-27i	REG	EPA:350.1	0	1
CAWA-14-54785	R-27i	REG	EPA:353.2	0	1
CAWA-14-54785	R-27i	REG	EPA:365.4	0	1
CAWA-14-54785	R-27i	REG	SM:A2340B	0	1
CAWA-14-54785	R-27i	REG	SW-846:6010B	0	17
CAWA-14-54785	R-27i	REG	SW-846:6020	0	11
CAWA-14-54785	R-27i	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

April 07, 2014

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

Re: LANL-WQH Groundwater Samples
Work Order: 344332
SDG: 2014-2960

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on March 11, 2014, and analyzed for Explosives by LCMSMS, GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, 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,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2014-2960
Enclosures

ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 344332
SDG: 2014-2960

Table of Contents

Case Narrative

Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 344332
SDG # : 2014-2960

April 07, 2014

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 March 11, 2014 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. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
344332001	CAWA-14-54782
344332002	CAWA-14-54782
344332003	CAWA-14-54782
344332004	CAWA-14-54782
344332005	CAWA-14-54782
344332006	CAWA-14-54782
344332007	CAWA-14-54784
344332008	CAWA-14-54780
344332009	CAWA-14-54780
344332010	CAWA-14-54783
344332011	CAWA-14-54783
344332012	CAWA-14-54783
344332013	CAWA-14-54783
344332014	CAWA-14-54783
344332015	CAWA-14-54783
344332016	CAWA-14-54785
344332017	CAWA-14-54781
344332018	CAWA-14-54781

Case Narrative

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

Data Package

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS, GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, 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.

Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 07 April 2014

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
Idaho Chemistry	SC00012
Idaho Radiochemistry	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
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122014−1
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 GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235−14−9
Utah NELAP	SC000122013−11
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

314832

ADEP

COC/Lab Request #: 2014-2960

Page 1 of 1

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: Sample Quantitation Limit

Special Instructions:

Field Sample ID	Sample Date	Sample Time	Sample Matrix	MSGP-Hg	WSP-8011-EDB_DBCP	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-8310-PAH	WSP-8321A-NMED HEXP	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-8081A-HCB	WSP-LL-8151A-PCP	WSP-LL-8260B	WSP-LL-8270C	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC			
CAWA-14-54782	Mar 7 2014	09:52	W	1	2	2	3	2	3		1		1	2	2	2	1		1	1			
CAWA-14-54784	Mar 7 2014	09:52	W							1		1						1					
CAWA-14-54780	Mar 7 2014	09:52	W		2	2																	
CAWA-14-54783	Mar 7 2014	12:08	W	1	2	2	3	2	3		1		1	2	2	2	1		1	1			
CAWA-14-54785	Mar 7 2014	12:08	W							1		1						1					
CAWA-14-54781	Mar 7 2014	12:08	W		2	2																	

Special Instructions:

Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
	Melissa Martinez	3/10/14 3:10		H. Taylor	031114 0900
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:** 2014-2960
Received By: H. Taylor	**Date Received:** 031114

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?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0cpm
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregeated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	**Yes**	**NA**	**No**	**Comments/Qualifiers (Required for Non-Conforming Items)**
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags (Blue ice) Dry ice (None) Other (describe) 4-6 *all temperatures are recorded in Celsius 16
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130462961 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?	✓			Sample ID's and containers affected:
7	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?			✓	Sample ID's affected: *see continuation
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			
14	Carrier and tracking number.				Circle Applicable: FedEx Air: 5908 1776 ↓ ↓ FedEx Ground: 7616-4, 7671-4, 7590-4, 7682-5, 7650-5, 7638-5 UPS: 5908 1776 ↓ ↓ Field Services Courier: 7605-5, 7627-6, 7649-6, 7579-5, 7580-6, 7568-16, 7557-16 Other

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HT Date 031114 Page 1 of 2

GEL Laboratories LLC **SAMPLE RECEIPT & REVIEW CONTINUATION FORM**

Client: LANL **Received By:** H. Taylor **Date Received:** 031114 **SDG/AR/COC/Work Order:** 2014-2960

RN 2014-2957
*CAWA-14-54733
received 2 containers for HEXP, chain indicates 3
* CAWA-14-54711
received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4
* CAWA-14-54745
received 2 containers for HEXP, chain indicates 3
received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4.

RN 2014-2958
*CAPA-14-54776
received 2 containers for HEXP, chain indicates 3
* CAPA-14-54774
received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4

RN 2014-2959
*CAWA-14-54701
received 1 container for PCB, chain indicates 3
received 2 containers for SVOA, chain indicates 4
* CAWA-14-54704
received 1 container for HEXP, chain indicates 3
* CAWA-14-54719
received 1 container each for 8011 and 8260, chain indicates 2 each

RN 2014-2960 * CAWA-14-54782 received 1 container for HEXP and SVOA
* CAWA-14-54780 and 54781 received 1 container each for 8011 and 8260

PM (or PMA) review: Initials HT Date 031114 Page 2 of 2

Subject: Sample Receipt for 031114
From: Hope Taylor <Hope.Taylor@gel.com>
Date: 3/11/2014 4:18 PM
To: "Keith R. Greene" <kgreene@lanl.gov>, LANL@amrad.com, "team.davis" <team.davis@gel.com>

RN 2014-2957
CAWA-14-54733 received 2 containers for HEXP, chain indicates 3. **CAWA-14-54711** received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4. **CAWA-14-54745** received 2 containers for HEXP, chain indicates 3. received 1 container for 8011, chain indicates 2. Received 2 containers for 8260, chain indicates 4

RN 2014-2958
CAPA-14-54776 received 2 containers for HEXP, chain indicates 3. **CAPA-14-54774** received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4

RN 2014-2959
CAWA-14-54701 received 1 container for PCB, chain indicates 3. Received 2 containers for SVOA, chain indicates 4. **CAWA-14-54704** received 1 container for HEXP, chain indicates 3. **CAWA-14-54719** received 1 container each for 8011 and 8260, chain indicates 2 each.

RN 2014-2960
CAWA-14-54782 received 1 container for HEXP, chain indicates 3. Received 1 container for SVOA, chain indicates 4. **CAWA-14-54780** and **54781** received 1 container each for 8011 and 8260, chain indicates 2 each.

Thanks

--
Hope Taylor
Project Manager Assistant
GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Direct: 843.769.7376 ext. 4778
Main: 843.556.8171
Fax: 843.766.1178
E-mail: hop01200@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: 10MAR14
ACTWGT: 45.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

4

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWHO

FedEx Express

2 of 2
MPS# 0263 5908 1776 7616
Mstr# 5908 1776 7605 0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

4

CHARLESTON SC 29407
(843) 556-8171
REF: WE991316W200

FedEx Express

1 of 2
TRK# 0201 5908 1776 7671
MASTER

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 50.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

4

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWH0

FedEx Express

2 of 2
MPS# 0263 5908 1776 7590
Mstr# 5908 1776 7580 0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 36.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

5

CHARLESTON SC 29407
(843) 556-8171
REF: WE991316W200

FedEx Express

2 of 2
MPS# 0263 5908 1776 7682
Mstr# 5908 1776 7671 0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

5

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWJ0

FedEx Express

TRK# 0201 5908 1776 7650

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

5

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWJ0

FedEx Express

2 of 3

MPS# 0263 5908 1776 7638
Mstr# 5908 1776 7627

0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

5

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWH0

FedEx Express

1 of 2

TRK# 0201 5908 1776 7605

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

MASTER

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 48.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

6

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWJ0

FedEx Express

1 of 3

TRK# 0201 5908 1776 7627

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

MASTER

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWJ0

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FedEx
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3 of 3
MPS# 0263 5908 1776 7649
Mstr# 5908 1776 7627 0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

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SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWHO

5

FedEx Express

3 of 3
MPS# 0263 5908 1776 7579
Mstr# 5908 1776 7557 0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 52.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWHO

6

FedEx Express

1 of 2
TRK# 0201 5908 1776 7580
MASTER

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 38.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

16

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWHO

FedEx Express

2 of 3

MPS# 5908 1776 7568
0263
Mstr# 5908 1776 7557
0201

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS

XX CHSA

Part # 156148-434 RIT2 10/11

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: 10MAR14
ACTWGT: 54.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

16

CHARLESTON SC 29407
(843) 556-8171
REF: MR1A015AGWHO

FedEx Express

1 of 3

TRK# 5908 1776 7557
0201
MASTER

TUE - 11 MAR 10:30A
PRIORITY OVERNIGHT

29407
SC-US CHS

XX CHSA

557
3.11

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, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 8260B DOE-AL
Analytical Batch Number:	1374437

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
344332004	CAWA-14-54782
344332009	CAWA-14-54780
344332013	CAWA-14-54783
344332018	CAWA-14-54781
1203054616	Method Blank (MB)
1203054617	344332004(CAWA-14-54782) Post Spike (PS)
1203054618	344332004(CAWA-14-54782) Post Spike Duplicate (PSD)
1203054619	Laboratory Control Sample (LCS)
1203054620	Laboratory Control Sample (LCS)
1203054621	344332004(CAWA-14-54782) Post Spike (PS)
1203054622	344332004(CAWA-14-54782) Post Spike Duplicate (PSD)
1203064036	Method Blank (MB)
1203064037	Laboratory Control Sample (LCS)
1203064038	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# 21.

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

Continuing Calibration Verification Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Blank (MB) Statement
Target analytes were detected in the blank 1203064036 (MB) below the reporting limit.

Surrogate Recoveries
The following sample recovered above the limits for Bromofluorobenzene and was re-analyzed passed two times the holding period with an unacceptable LCS pair and passed surrogates. The initial results are reported. See the Data Exception Report in the miscellaneous section of the deliverable. 344332018 (CAWA-14-54781).

Laboratory Control Sample (LCS) Recovery
The LCS 1203054619 (LCS) and 1203064037 (LCS) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported. See the Data Exception Report in the miscellaneous section of the data package.

QC Sample Designation
Sample 344332004 (CAWA-14-54782) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement
The spike recoveries were within the required acceptance limits.

Matrix Spike Duplicate (PSD) Recovery Statement
The spike duplicate 1203054618 (CAWA-14-54782) 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 RPD between the matrix spike pair 1203054617 (CAWA-14-54782) and 1203054618 (CAWA-14-54782) were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the deliverable.

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. Samples were not analyzed

within the recommended holding. However, the samples were analyzed within two times the holding period. This satisfies the client criteria.

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
The following sample was re-analyzed due to unacceptable surrogate recoveries. 344332018 (CAWA-14-54781).

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: 1281339.

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) were 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 are included on the Sample Data Summary (Form I).

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014−2960 GEL Work Order: 344332

The Qualifiers in this report are defined as follows:

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

** Analyte is a surrogate compound

B The target analyte was detected in the associated blank.

E Concentration of the target analyte exceeds the instrument calibration range

H Analytical holding time was exceeded

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: Erin Haubert **Name: Erin Haubert**

Date: 08 APR 2014 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 18:41**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 18:41**				
Data File:	**032214V6\6A615.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 18:41**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 18:41**				
Data File:	**032214V6\6A615.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 18:41**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 18:41**				
Data File:	**032214V6\6A615.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	58.1	50.0	ug/L	116	(78%-124%)
Bromofluorobenzene	59.3	50.0	ug/L	119	(80%-120%)
Toluene-d8	50.6	50.0	ug/L	101	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	11.452	6.85	ug/L	0	J
	unknown siloxane	13.848	7.92	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332009**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54780**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:10**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:10**				
Data File:	**032214V6\6A616.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332009**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54780**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:10**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:10**				
Data File:	**032214V6\6A616.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332009**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54780**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:10**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:10**				
Data File:	**032214V6\6A616.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	57.4	50.0	ug/L	115	(78%-124%)
Bromofluorobenzene	53.8	50.0	ug/L	108	(80%-120%)
Toluene-d8	49.1	50.0	ug/L	98.2	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	11.452	9.72	ug/L	0	J
	unknown siloxane	13.848	11.3	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:39**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:39**				
Data File:	**032214V6\6A617.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:39**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:39**				
Data File:	**032214V6\6A617.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 19:39**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 19:39**				
Data File:	**032214V6\6A617.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	57.1	50.0	ug/L	114	(78%-124%)
Bromofluorobenzene	58.0	50.0	ug/L	116	(80%-120%)
Toluene-d8	49.9	50.0	ug/L	99.8	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	11.452	6.92	ug/L	0	J
	unknown siloxane	13.848	8.53	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332018**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54781**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 20:08**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 20:08**				
Data File:	**032214V6\6A618.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332018**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54781**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 20:08**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 20:08**				
Data File:	**032214V6\6A618.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332018**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54781**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 20:08**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 20:08**				
Data File:	**032214V6\6A618.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
1,2-Dichloroethane-d4	61.1	50.0	ug/L	122		(78%-124%)
Bromofluorobenzene	60.7	50.0	ug/L	121	*	(80%-120%)
Toluene-d8	52.8	50.0	ug/L	106		(80%-120%)

Tentatively Identified Compound Summary

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

Quality Control Summary

Volatile

Surrogate Recovery Report

SDG Number: 2014-2960

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203054619	LCS for batch 1374437	103	98	103
1203054620	LCS for batch 1374437	106	100	110
1203054616	MB for batch 1374437	106	101	115
1203054617	CAWA-14-54782PS	111	99	103
1203054618	CAWA-14-54782PSD	114	103	108
1203054621	CAWA-14-54782PS	109	101	110
1203054622	CAWA-14-54782PSD	108	100	107
1203064037	LCS for batch 1374437	107	99	104
1203064038	LCS for batch 1374437	107	98	109
1203064036	MB for batch 1374437	113	100	106
344332004	CAWA-14-54782	116	101	119
344332009	CAWA-14-54780	115	98	108
344332013	CAWA-14-54783	114	100	116
344332018	CAWA-14-54781	122	106	121 *

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: **2014-2960**
Client ID: **CAWA-14-54782PS**
Lab Sample ID **1203054617**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **03/21/2014 19:31**
Dilution: 1
Batch ID: **1374437**

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	HU	93.4	93	72-120
75-05-8	PS	Acetonitrile	1250	0.00	HU	1340	107	61-135
67-64-1	PS	Acetone	250	0.00	HU	122	49	29-144
74-88-4	PS	Iodomethane	250	0.00	HU	266	106	73-120
75-15-0	PS	Carbon disulfide	250	0.00	HU	285	114	79-138
108-05-4	PS	Vinyl acetate	250	0.00	HU	187	75	60-136
78-93-3	PS	2-Butanone	250	0.00	HU	177	71	38-136
108-10-1	PS	4-Methyl-2-pentanone	250	0.00	HU	233	93	70-132
591-78-6	PS	2-Hexanone	250	0.00	HU	187	75	48-137
75-71-8	PS	Dichlorodifluoromethane	50.0	0.00	HU	52.4	105	51-133
74-87-3	PS	Chloromethane	50.0	0.00	HU	58.9	118	54-135
75-01-4	PS	Vinyl chloride	50.0	0.00	HU	62.3	125	52-129
74-83-9	PS	Bromomethane	50.0	0.00	HU	53.9	108	67-128
75-00-3	PS	Chloroethane	50.0	0.00	HU	49.7	99	69-120
75-69-4	PS	Trichlorofluoromethane	50.0	0.00	HU	54.5	109	66-126
60-29-7	PS	Ethyl ether	50.0	0.00	HU	44.6	89	69-120
75-35-4	PS	1,1-Dichloroethylene	50.0	0.00	HU	50.3	101	74-130
75-09-2	PS	Methylene chloride	50.0	2.30	HU	49.3	94	73-120
1634-04-4	PS	tert-Butyl methyl ether	50.0	0.00	HU	49.5	99	71-124
156-60-5	PS	trans-1,2-Dichloroethylene	50.0	0.00	HU	50.6	101	75-124
75-34-3	PS	1,1-Dichloroethane	50.0	0.00	HU	52.3	105	76-122
156-59-2	PS	cis-1,2-Dichloroethylene	50.0	0.00	HU	51.2	102	77-121

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PS**
Lab Sample ID **1203054617**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **03/21/2014 19:31**
Dilution: 1
Batch ID: **1374437**

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	HU	52.1	104	72-129
74-97-5	PS	Bromochloromethane	50.0	0.00	HU	50.7	101	78-122
67-66-3	PS	Chloroform	50.0	0.00	HU	53.0	106	75-123
71-55-6	PS	1,1,1-Trichloroethane	50.0	0.00	HU	54.0	108	76-129
563-58-6	PS	1,1-Dichloropropene	50.0	0.00	HU	50.1	100	76-125
56-23-5	PS	Carbon tetrachloride	50.0	0.00	HU	56.9	114	76-132
107-06-2	PS	1,2-Dichloroethane	50.0	0.00	HU	52.9	106	68-128
71-43-2	PS	Benzene	50.0	0.00	HU	50.3	101	75-120
79-01-6	PS	Trichloroethylene	50.0	0.00	HU	53.7	107	75-125
78-87-5	PS	1,2-Dichloropropane	50.0	0.00	HU	51.8	104	75-120
74-95-3	PS	Dibromomethane	50.0	0.00	HU	52.5	105	77-122
75-27-4	PS	Bromodichloromethane	50.0	0.00	HU	54.2	108	76-129
10061-01-5	PS	cis-1,3-Dichloropropylene	50.0	0.00	HU	50.2	100	75-127
108-88-3	PS	Toluene	50.0	0.00	HU	47.0	94	72-120
10061-02-6	PS	trans-1,3-Dichloropropylene	50.0	0.00	HU	47.8	96	73-123
79-00-5	PS	1,1,2-Trichloroethane	50.0	0.00	HU	48.2	96	77-120
142-28-9	PS	1,3-Dichloropropane	50.0	0.00	HU	48.6	97	73-120
127-18-4	PS	Tetrachloroethylene	50.0	0.00	HU	48.4	97	67-124
124-48-1	PS	Dibromochloromethane	50.0	0.00	HU	49.5	99	70-130
108-90-7	PS	Chlorobenzene	50.0	0.00	HU	46.5	93	74-120
100-41-4	PS	Ethylbenzene	50.0	0.00	HU	47.4	95	72-120
95-47-6	PS	o-Xylene	50.0	0.00	HU	47.8	96	72-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PS**
Lab Sample ID **1203054617**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **03/21/2014 19:31**
Dilution: 1
Batch ID: **1374437**

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	HU	45.9	92	74-124
75-25-2	PS	Bromoform	50.0	0.00	HU	51.0	102	61-135
98-82-8	PS	Isopropylbenzene	50.0	0.00	HU	46.1	92	71-124
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	HU	47.7	95	74-124
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	HU	46.7	93	71-125
108-86-1	PS	Bromobenzene	50.0	0.00	HU	44.0	88	72-120
103-65-1	PS	n-Propylbenzene	50.0	0.00	HU	46.9	94	69-121
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	HU	45.9	92	71-123
95-49-8	PS	2-Chlorotoluene	50.0	0.00	HU	45.5	91	71-120
106-43-4	PS	4-Chlorotoluene	50.0	0.00	HU	43.9	88	70-120
98-06-6	PS	tert-Butylbenzene	50.0	0.00	HU	45.9	92	72-124
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	HU	44.1	88	71-122
135-98-8	PS	sec-Butylbenzene	50.0	0.00	HU	46.4	93	71-124
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	HU	45.4	91	70-124
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	HU	42.7	85	70-120
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	HU	42.7	85	70-120
104-51-8	PS	n-Butylbenzene	50.0	0.00	HU	45.8	92	69-125
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	HU	44.1	88	60-129
91-20-3	PS	Naphthalene	50.0	0.00	HU	41.8	84	58-134
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	HU	40.0	80	52-132
120-82-1	PS	1,2,4-Trichlorobenzene	50.0	0.00	HU	40.0	80	59-126
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	HU	50.6	101	78-128

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PS**
Lab Sample ID **1203054617**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **03/21/2014 19:31**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	PS	1,2-Dichlorobenzene	50.0	0.00	HU	43.5	87	72-120
71-36-3	PS	n-Butyl alcohol	5000	0.00	HU	5350	107	64-138

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PSD**
Lab Sample ID **1203054618**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **03/21/2014 20:00**
Dilution: 1
Batch ID: **1374437**

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	HU	99.6	100	72-120	6	0-20
75-05-8	PSD	Acetonitrile	1250	0.00	HU	1420	113	61-135	6	0-20
67-64-1	PSD	Acetone	250	0.00	HU	130	52	29-144	7	0-20
74-88-4	PSD	Iodomethane	250	0.00	HU	280	112	73-120	5	0-20
75-15-0	PSD	Carbon disulfide	250	0.00	HU	302	121	79-138	6	0-20
108-05-4	PSD	Vinyl acetate	250	0.00	HU	239	96	60-136	25 *	0-20
78-93-3	PSD	2-Butanone	250	0.00	HU	188	75	38-136	6	0-20
108-10-1	PSD	4-Methyl-2-pentanone	250	0.00	HU	247	99	70-132	6	0-20
591-78-6	PSD	2-Hexanone	250	0.00	HU	199	80	48-137	6	0-20
75-71-8	PSD	Dichlorodifluoromethane	50.0	0.00	HU	67.8	136 *	51-133	26 *	0-20
74-87-3	PSD	Chloromethane	50.0	0.00	HU	75.9	152 *	54-135	25 *	0-20
75-01-4	PSD	Vinyl chloride	50.0	0.00	HU	81.1	162 *	52-129	26 *	0-20
74-83-9	PSD	Bromomethane	50.0	0.00	HU	69.8	140 *	67-128	26 *	0-20
75-00-3	PSD	Chloroethane	50.0	0.00	HU	65.0	130 *	69-120	27 *	0-20
75-69-4	PSD	Trichlorofluoromethane	50.0	0.00	HU	71.3	143 *	66-126	27 *	0-20
60-29-7	PSD	Ethyl ether	50.0	0.00	HU	58.2	116	69-120	27 *	0-20
75-35-4	PSD	1,1-Dichloroethylene	50.0	0.00	HU	53.7	107	74-130	7	0-20
75-09-2	PSD	Methylene chloride	50.0	2.30	HU	51.0	97	73-120	3	0-20
1634-04-4	PSD	tert-Butyl methyl ether	50.0	0.00	HU	51.4	103	71-124	4	0-20
156-60-5	PSD	trans-1,2-Dichloroethylene	50.0	0.00	HU	53.3	107	75-124	5	0-20
75-34-3	PSD	1,1-Dichloroethane	50.0	0.00	HU	54.8	110	76-122	5	0-20
156-59-2	PSD	cis-1,2-Dichloroethylene	50.0	0.00	HU	53.6	107	77-121	4	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PSD**
Lab Sample ID **1203054618**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **03/21/2014 20:00**
Dilution: 1
Batch ID: **1374437**

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	HU	55.4	111	72-129	6	0-20
74-97-5	PSD	Bromochloromethane	50.0	0.00	HU	52.7	105	78-122	4	0-20
67-66-3	PSD	Chloroform	50.0	0.00	HU	55.1	110	75-123	4	0-20
71-55-6	PSD	1,1,1-Trichloroethane	50.0	0.00	HU	57.5	115	76-129	6	0-20
563-58-6	PSD	1,1-Dichloropropene	50.0	0.00	HU	53.3	107	76-125	6	0-20
56-23-5	PSD	Carbon tetrachloride	50.0	0.00	HU	60.8	122	76-132	7	0-20
107-06-2	PSD	1,2-Dichloroethane	50.0	0.00	HU	54.0	108	68-128	2	0-20
71-43-2	PSD	Benzene	50.0	0.00	HU	52.8	106	75-120	5	0-20
79-01-6	PSD	Trichloroethylene	50.0	0.00	HU	57.1	114	75-125	6	0-20
78-87-5	PSD	1,2-Dichloropropane	50.0	0.00	HU	53.8	108	75-120	4	0-20
74-95-3	PSD	Dibromomethane	50.0	0.00	HU	54.7	109	77-122	4	0-20
75-27-4	PSD	Bromodichloromethane	50.0	0.00	HU	55.9	112	76-129	3	0-20
10061-01-5	PSD	cis-1,3-Dichloropropylene	50.0	0.00	HU	52.3	105	75-127	4	0-20
108-88-3	PSD	Toluene	50.0	0.00	HU	49.8	100	72-120	6	0-20
10061-02-6	PSD	trans-1,3-Dichloropropylene	50.0	0.00	HU	49.9	100	73-123	4	0-20
79-00-5	PSD	1,1,2-Trichloroethane	50.0	0.00	HU	49.9	100	77-120	3	0-20
142-28-9	PSD	1,3-Dichloropropane	50.0	0.00	HU	50.8	102	73-120	4	0-20
127-18-4	PSD	Tetrachloroethylene	50.0	0.00	HU	51.7	103	67-124	7	0-20
124-48-1	PSD	Dibromochloromethane	50.0	0.00	HU	51.4	103	70-130	4	0-20
108-90-7	PSD	Chlorobenzene	50.0	0.00	HU	49.1	98	74-120	6	0-20
100-41-4	PSD	Ethylbenzene	50.0	0.00	HU	50.2	100	72-120	6	0-20
95-47-6	PSD	o-Xylene	50.0	0.00	HU	50.8	102	72-120	6	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PSD**
Lab Sample ID **1203054618**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **03/21/2014 20:00**
Dilution: 1
Batch ID: **1374437**

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	HU	49.4	99	74-124	7	0-20
75-25-2	PSD	Bromoform	50.0	0.00	HU	54.7	109	61-135	7	0-20
98-82-8	PSD	Isopropylbenzene	50.0	0.00	HU	49.9	100	71-124	8	0-20
79-34-5	PSD	1,1,2,2-Tetrachloroethane	50.0	0.00	HU	50.7	101	74-124	6	0-20
96-18-4	PSD	1,2,3-Trichloropropane	50.0	0.00	HU	49.4	99	71-125	6	0-20
108-86-1	PSD	Bromobenzene	50.0	0.00	HU	47.1	94	72-120	7	0-20
103-65-1	PSD	n-Propylbenzene	50.0	0.00	HU	51.1	102	69-121	9	0-20
108-67-8	PSD	1,3,5-Trimethylbenzene	50.0	0.00	HU	50.1	100	71-123	9	0-20
95-49-8	PSD	2-Chlorotoluene	50.0	0.00	HU	49.4	99	71-120	8	0-20
106-43-4	PSD	4-Chlorotoluene	50.0	0.00	HU	47.5	95	70-120	8	0-20
98-06-6	PSD	tert-Butylbenzene	50.0	0.00	HU	49.7	99	72-124	8	0-20
95-63-6	PSD	1,2,4-Trimethylbenzene	50.0	0.00	HU	48.3	97	71-122	9	0-20
135-98-8	PSD	sec-Butylbenzene	50.0	0.00	HU	50.5	101	71-124	8	0-20
99-87-6	PSD	4-Isopropyltoluene	50.0	0.00	HU	49.5	99	70-124	9	0-20
541-73-1	PSD	1,3-Dichlorobenzene	50.0	0.00	HU	45.8	92	70-120	7	0-20
106-46-7	PSD	1,4-Dichlorobenzene	50.0	0.00	HU	45.6	91	70-120	6	0-20
104-51-8	PSD	n-Butylbenzene	50.0	0.00	HU	49.9	100	69-125	9	0-20
87-68-3	PSD	Hexachlorobutadiene	50.0	0.00	HU	48.7	97	60-129	10	0-20
91-20-3	PSD	Naphthalene	50.0	0.00	HU	47.4	95	58-134	13	0-20
87-61-6	PSD	1,2,3-Trichlorobenzene	50.0	0.00	HU	44.1	88	52-132	10	0-20
120-82-1	PSD	1,2,4-Trichlorobenzene	50.0	0.00	HU	44.1	88	59-126	10	0-20
630-20-6	PSD	1,1,1,2-Tetrachloroethane	50.0	0.00	HU	52.9	106	78-128	4	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PSD**
Lab Sample ID **1203054618**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **03/21/2014 20:00**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-50-1	PSD	1,2-Dichlorobenzene	50.0	0.00	HU	46.5	93	72-120	7	0-20
71-36-3	PSD	n-Butyl alcohol	5000	0.00	HU	5780	116	64-138	8	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203054619**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/21/2014 10:21**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS	m,p-Xylenes	100	0.0	93.4	93	80-120
75-05-8	LCS	Acetonitrile	1250	0.0	1170	94	63-131
67-64-1	LCS	Acetone	250	0.0	245	98	50-149
74-88-4	LCS	Iodomethane	250	0.0	257	103	75-120
75-15-0	LCS	Carbon disulfide	250	0.0	277	111	80-136
108-05-4	LCS	Vinyl acetate	250	0.0	161	64 *	78-130
78-93-3	LCS	2-Butanone	250	0.0	237	95	57-148
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	210	84	75-130
591-78-6	LCS	2-Hexanone	250	0.0	211	85	64-149
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	47.6	95	58-129
74-87-3	LCS	Chloromethane	50.0	0.0	49.5	99	59-131
75-01-4	LCS	Vinyl chloride	50.0	0.0	52.7	105	59-127
74-83-9	LCS	Bromomethane	50.0	0.0	46.2	92	70-125
75-00-3	LCS	Chloroethane	50.0	0.0	43.1	86	73-120
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	47.0	94	73-123
60-29-7	LCS	Ethyl ether	50.0	0.0	36.8	74	73-120
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	49.9	100	80-128
75-09-2	LCS	Methylene chloride	50.0	0.0	46.5	93	75-120
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	44.7	89	74-122
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	48.9	98	80-121
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	49.4	99	79-120
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	48.0	96	79-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203054619**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/21/2014 10:21**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS	2,2-Dichloropropane	50.0	0.0	51.7	103	79-130
74-97-5	LCS	Bromochloromethane	50.0	0.0	47.1	94	80-121
67-66-3	LCS	Chloroform	50.0	0.0	49.3	99	79-120
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	52.8	106	80-128
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	49.5	99	80-123
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	55.8	112	80-131
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	46.5	93	73-120
71-43-2	LCS	Benzene	50.0	0.0	47.9	96	78-120
79-01-6	LCS	Trichloroethylene	50.0	0.0	52.3	105	80-121
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	47.5	95	79-120
74-95-3	LCS	Dibromomethane	50.0	0.0	47.5	95	80-120
75-27-4	LCS	Bromodichloromethane	50.0	0.0	49.9	100	80-126
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	47.7	95	80-125
108-88-3	LCS	Toluene	50.0	0.0	46.2	92	78-120
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	44.5	89	79-121
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	43.5	87	78-120
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	44.3	89	75-120
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	49.9	100	74-123
124-48-1	LCS	Dibromochloromethane	50.0	0.0	45.5	91	73-129
108-90-7	LCS	Chlorobenzene	50.0	0.0	45.4	91	79-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	46.8	94	79-120
95-47-6	LCS	o-Xylene	50.0	0.0	46.4	93	80-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203054619**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/21/2014 10:21**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	LCS	Styrene	50.0	0.0	45.7	91	80-121
75-25-2	LCS	Bromoform	50.0	0.0	48.1	96	65-135
98-82-8	LCS	Isopropylbenzene	50.0	0.0	47.7	95	79-121
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	43.9	88	76-123
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	43.4	87	76-120
108-86-1	LCS	Bromobenzene	50.0	0.0	44.2	88	79-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	49.1	98	80-123
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	47.9	96	80-120
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	46.7	93	79-120
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	45.2	90	79-120
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	47.9	96	79-122
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	46.2	92	80-120
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	48.7	97	80-121
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	48.5	97	80-121
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	44.3	89	76-120
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	43.6	87	78-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	49.7	99	80-123
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	48.2	96	71-128
91-20-3	LCS	Naphthalene	50.0	0.0	43.9	88	64-132
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	42.8	86	61-132
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	44.6	89	66-130
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	48.0	96	80-125

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203054619**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/21/2014 10:21**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	43.6	87	78-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	4800	96	67-137

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203054620**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/21/2014 11:48**
Dilution: 1
Batch ID: **1374437**

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	248	99	65-126
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	266	106	73-132
107-05-1	LCS	Allyl chloride	250	0.0	225	90	67-127
107-13-1	LCS	Acrylonitrile	250	0.0	259	104	74-122
107-12-0	LCS	Propionitrile	250	0.0	270	108	73-124
126-98-7	LCS	Methacrylonitrile	250	0.0	246	98	68-123
80-62-6	LCS	Methyl methacrylate	250	0.0	256	103	79-120
97-63-2	LCS	Ethyl methacrylate	250	0.0	230	92	77-120
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2550	102	72-133
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	52.1	104	57-142

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782PS**
Lab Sample ID **1203054621**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **03/21/2014 20:28**
Dilution: 1
Batch ID: **1374437**

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	HU	220	88	57-131
76-13-1	PS	Trichlorotrifluoroethane	250	0.00	HU	273	109	76-133
107-05-1	PS	Allyl chloride	250	0.00	HU	236	94	65-130
107-13-1	PS	Acrylonitrile	250	0.00	HU	248	99	70-128
107-12-0	PS	Propionitrile	250	0.00	HU	253	101	68-131
126-98-7	PS	Methacrylonitrile	250	0.00	HU	243	97	64-129
80-62-6	PS	Methyl methacrylate	250	0.00	HU	248	99	76-120
97-63-2	PS	Ethyl methacrylate	250	0.00	HU	229	92	72-122
78-83-1	PS	Isobutyl alcohol	2500	0.00	HU	2340	93	72-134
126-99-8	PS	2-Chloro-1,3-butadiene	50.0	0.00	HU	52.5	105	46-140

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Sample Type: **Post Spike Duplicate**
Client ID: **CAWA-14-54782PSD**
Matrix: **W**
Lab Sample ID **1203054622**
Instrument: **VOA6.I**
Analysis Date: **03/21/2014 20:57**
Dilution: 1
Analyst: **GRB2**
Purge Vol: **5 mL**
Batch ID: **1374437**

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	HU	217	87	57-131	1	0-20
76-13-1	PSD	Trichlorotrifluoroethane	250	0.00	HU	267	107	76-133	2	0-20
107-05-1	PSD	Allyl chloride	250	0.00	HU	233	93	65-130	1	0-20
107-13-1	PSD	Acrylonitrile	250	0.00	HU	249	100	70-128	0	0-20
107-12-0	PSD	Propionitrile	250	0.00	HU	257	103	68-131	2	0-20
126-98-7	PSD	Methacrylonitrile	250	0.00	HU	246	98	64-129	1	0-20
80-62-6	PSD	Methyl methacrylate	250	0.00	HU	252	101	76-120	2	0-20
97-63-2	PSD	Ethyl methacrylate	250	0.00	HU	231	92	72-122	1	0-20
78-83-1	PSD	Isobutyl alcohol	2500	0.00	HU	2410	96	72-134	3	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	50.0	0.00	HU	52.5	105	46-140	0	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203064037**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/22/2014 12:52**
Dilution: 1
Batch ID: **1374437**

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	98.8	99	80-120
75-05-8	LCS	Acetonitrile	1250	0.0	1330	107	63-131
67-64-1	LCS	Acetone	250	0.0	281	113	50-149
74-88-4	LCS	Iodomethane	250	0.0	270	108	75-120
75-15-0	LCS	Carbon disulfide	250	0.0	297	119	80-136
108-05-4	LCS	Vinyl acetate	250	0.0	161	64 *	78-130
78-93-3	LCS	2-Butanone	250	0.0	266	106	57-148
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	226	90	75-130
591-78-6	LCS	2-Hexanone	250	0.0	239	96	64-149
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	40.4	81	58-129
74-87-3	LCS	Chloromethane	50.0	0.0	49.5	99	59-131
75-01-4	LCS	Vinyl chloride	50.0	0.0	54.5	109	59-127
74-83-9	LCS	Bromomethane	50.0	0.0	48.9	98	70-125
75-00-3	LCS	Chloroethane	50.0	0.0	42.8	86	73-120
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	48.1	96	73-123
60-29-7	LCS	Ethyl ether	50.0	0.0	35.9	72 *	73-120
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	53.7	107	80-128
75-09-2	LCS	Methylene chloride	50.0	0.0	49.4	99	75-120
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	45.7	91	74-122
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	52.7	105	80-121
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	52.8	106	79-120
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	51.6	103	79-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203064037**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/22/2014 12:52**
Dilution: 1
Batch ID: **1374437**

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	79-130
74-97-5	LCS	Bromochloromethane	50.0	0.0	48.6	97	80-121
67-66-3	LCS	Chloroform	50.0	0.0	52.8	106	79-120
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	56.9	114	80-128
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	53.2	106	80-123
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	60.3	121	80-131
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	49.8	100	73-120
71-43-2	LCS	Benzene	50.0	0.0	51.0	102	78-120
79-01-6	LCS	Trichloroethylene	50.0	0.0	56.0	112	80-121
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	50.0	100	79-120
74-95-3	LCS	Dibromomethane	50.0	0.0	49.8	100	80-120
75-27-4	LCS	Bromodichloromethane	50.0	0.0	51.9	104	80-126
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	49.3	99	80-125
108-88-3	LCS	Toluene	50.0	0.0	48.8	98	78-120
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	45.4	91	79-121
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	44.8	90	78-120
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	46.5	93	75-120
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	52.7	105	74-123
124-48-1	LCS	Dibromochloromethane	50.0	0.0	46.2	92	73-129
108-90-7	LCS	Chlorobenzene	50.0	0.0	47.2	94	79-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	49.8	100	79-120
95-47-6	LCS	o-Xylene	50.0	0.0	49.6	99	80-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203064037**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/22/2014 12:52**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	LCS	Styrene	50.0	0.0	47.6	95	80-121
75-25-2	LCS	Bromoform	50.0	0.0	49.0	98	65-135
98-82-8	LCS	Isopropylbenzene	50.0	0.0	51.0	102	79-121
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	45.9	92	76-123
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	45.9	92	76-120
108-86-1	LCS	Bromobenzene	50.0	0.0	45.3	91	79-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	52.5	105	80-123
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	51.1	102	80-120
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	49.3	99	79-120
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	47.8	96	79-120
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	50.3	101	79-122
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	48.5	97	80-120
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	51.9	104	80-121
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	51.0	102	80-121
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	46.0	92	76-120
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	45.1	90	78-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	53.4	107	80-123
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	50.0	100	71-128
91-20-3	LCS	Naphthalene	50.0	0.0	44.0	88	64-132
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	42.2	84	61-132
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	44.5	89	66-130
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	49.9	100	80-125

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203064037**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/22/2014 12:52**
Dilution: 1
Batch ID: **1374437**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	LCS	1,2-Dichlorobenzene	50.0	0.0	44.8	90	78-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	5380	108	67-137

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1374437**
Lab Sample ID **1203064038**
Instrument: **VOA6.I**
Analyst: **GRB2**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/22/2014 14:49**
Dilution: 1
Batch ID: **1374437**

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	225	90	65-126
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	264	106	73-132
107-05-1	LCS	Allyl chloride	250	0.0	221	88	67-127
107-13-1	LCS	Acrylonitrile	250	0.0	251	100	74-122
107-12-0	LCS	Propionitrile	250	0.0	261	104	73-124
126-98-7	LCS	Methacrylonitrile	250	0.0	246	98	68-123
80-62-6	LCS	Methyl methacrylate	250	0.0	254	101	79-120
97-63-2	LCS	Ethyl methacrylate	250	0.0	230	92	77-120
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2510	100	72-133
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	51.8	104	57-142

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1374437**	**Instrument ID:**	**VOA6.I**	**Data File:**	**032114V6\6A507BAR.D**
Lab Sample ID:	**1203054616**	**Prep Date:**	**03/21/2014 12:17**	**Analyzed:**	**03/21/14 12:17**
Column:	**DB-624**				

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

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1374437	1203054619	032114V6\6A503LAR.D	03/21/14	1021
02 LCS for batch 1374437	1203054620	032114V6\6A506SHAR.D	03/21/14	1148
03 CAWA-14-54782PS	1203054617	032114V6\6A522.D	03/21/14	1931
04 CAWA-14-54782PSD	1203054618	032114V6\6A523.D	03/21/14	2000
05 CAWA-14-54782PS	1203054621	032114V6\6A524.D	03/21/14	2028
06 CAWA-14-54782PSD	1203054622	032114V6\6A525.D	03/21/14	2057

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1374437**	**Instrument ID:**	**VOA6.I**	**Data File:**	**032214V6\6A609BAR.D**
Lab Sample ID:	**1203064036**	**Prep Date:**	**03/22/2014 15:47**	**Analyzed:**	**03/22/14 15:47**
Column:	**DB-624**				

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

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
08 LCS for batch 1374437	1203064037	032214V6\6A603LAR.D	03/22/14	1252
09 LCS for batch 1374437	1203064038	032214V6\6A607SHAR.D	03/22/14	1449
10 CAWA-14-54782	344332004	032214V6\6A615.D	03/22/14	1841
11 CAWA-14-54780	344332009	032214V6\6A616.D	03/22/14	1910
12 CAWA-14-54783	344332013	032214V6\6A617.D	03/22/14	1939
13 CAWA-14-54781	344332018	032214V6\6A618.D	03/22/14	2008

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054616**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 12:17**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 12:17**				
Data File:	**032114V6\6A507BAR.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
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	0.200	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	1.00	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054616**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 12:17**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 12:17**				
Data File:	**032114V6\6A507BAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	1.00	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054616**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 12:17**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 12:17**				
Data File:	**032114V6\6A507BAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	53.1	50.0	ug/L	106	(78%-124%)
Bromofluorobenzene	57.6	50.0	ug/L	115	(80%-120%)
Toluene-d8	50.4	50.0	ug/L	101	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054617**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 19:31**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 19:31**				
Data File:	**032114V6\6A522.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		54.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		47.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		48.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.3	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		50.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		40.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		46.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		40.0	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		44.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		43.5	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.9	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		51.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		45.9	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		42.7	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		48.6	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		42.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		52.1	ug/L	0.300	1.00
78-93-3	2-Butanone		177	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		45.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		187	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		43.9	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		45.4	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		233	ug/L	1.50	5.00
67-64-1	Acetone		122	ug/L	3.00	10.0
75-05-8	Acetonitrile		1340	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	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		50.3	ug/L	0.300	1.00
108-86-1	Bromobenzene		44.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		54.2	ug/L	0.300	1.00
75-25-2	Bromoform		51.0	ug/L	0.300	1.00
74-83-9	Bromomethane		53.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		285	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054617**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 19:31**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 19:31**				
Data File:	**032114V6\6A522.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		56.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.5	ug/L	0.300	1.00
75-00-3	Chloroethane		49.7	ug/L	0.300	1.00
67-66-3	Chloroform		53.0	ug/L	0.300	1.00
74-87-3	Chloromethane		58.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		49.5	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.5	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		52.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		44.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		44.1	ug/L	0.300	1.00
74-88-4	Iodomethane		266	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.1	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		49.3	ug/L	3.00	10.0
91-20-3	Naphthalene		41.8	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		48.4	ug/L	0.300	1.00
108-88-3	Toluene		47.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		53.7	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		54.5	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		187	ug/L	1.50	5.00
75-01-4	Vinyl chloride		62.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		51.2	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		50.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		93.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5350	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		45.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		46.9	ug/L	0.300	1.00
95-47-6	o-Xylene		47.8	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.4	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		49.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		45.9	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054617**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 19:31**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 19:31**				
Data File:	**032114V6\6A522.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		50.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	55.3	50.0	ug/L	111	(78%-124%)
Bromofluorobenzene	51.3	50.0	ug/L	103	(80%-120%)
Toluene-d8	49.4	50.0	ug/L	98.8	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054618**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:00**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:00**				
Data File:	**032114V6\6A523.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		57.5	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		50.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		49.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		54.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		53.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		53.3	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		44.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		49.4	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		46.5	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		54.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		53.8	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		50.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		55.4	ug/L	0.300	1.00
78-93-3	2-Butanone		188	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		49.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		199	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		47.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		247	ug/L	1.50	5.00
67-64-1	Acetone		130	ug/L	3.00	10.0
75-05-8	Acetonitrile		1420	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	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		52.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		47.1	ug/L	0.300	1.00
74-97-5	Bromochloromethane		52.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		55.9	ug/L	0.300	1.00
75-25-2	Bromoform		54.7	ug/L	0.300	1.00
74-83-9	Bromomethane		69.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		302	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054618**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:00**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:00**				
Data File:	**032114V6\6A523.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		60.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.1	ug/L	0.300	1.00
75-00-3	Chloroethane		65.0	ug/L	0.300	1.00
67-66-3	Chloroform		55.1	ug/L	0.300	1.00
74-87-3	Chloromethane		75.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		54.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		67.8	ug/L	0.300	1.00
60-29-7	Ethyl ether		58.2	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.7	ug/L	0.300	1.00
74-88-4	Iodomethane		280	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		49.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		51.0	ug/L	3.00	10.0
91-20-3	Naphthalene		47.4	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		49.4	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		51.7	ug/L	0.300	1.00
108-88-3	Toluene		49.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		57.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		71.3	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		239	ug/L	1.50	5.00
75-01-4	Vinyl chloride		81.1	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		52.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		99.6	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5780	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		49.9	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		51.1	ug/L	0.300	1.00
95-47-6	o-Xylene		50.8	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		50.5	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		51.4	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		49.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054618**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:00**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:00**				
Data File:	**032114V6\6A523.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		53.3	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		49.9	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	56.8	50.0	ug/L	114	(78%-124%)
Bromofluorobenzene	54.0	50.0	ug/L	108	(80%-120%)
Toluene-d8	51.6	50.0	ug/L	103	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054619**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 10:21**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 10:21**				
Data File:	**032114V6\6A503LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		48.0	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		43.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		43.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		49.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		49.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		49.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		42.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		43.4	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.2	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		43.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.5	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		47.5	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.9	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		43.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.7	ug/L	0.300	1.00
78-93-3	2-Butanone		237	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		46.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		211	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		45.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		210	ug/L	1.50	5.00
67-64-1	Acetone		245	ug/L	3.00	10.0
75-05-8	Acetonitrile		1170	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	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		47.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		44.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.1	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		49.9	ug/L	0.300	1.00
75-25-2	Bromoform		48.1	ug/L	0.300	1.00
74-83-9	Bromomethane		46.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		277	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054619**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 10:21**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 10:21**				
Data File:	**032114V6\6A503LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		55.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		45.4	ug/L	0.300	1.00
75-00-3	Chloroethane		43.1	ug/L	0.300	1.00
67-66-3	Chloroform		49.3	ug/L	0.300	1.00
74-87-3	Chloromethane		49.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.5	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.5	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		47.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		36.8	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		46.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.2	ug/L	0.300	1.00
74-88-4	Iodomethane		257	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		47.7	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		46.5	ug/L	3.00	10.0
91-20-3	Naphthalene		43.9	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.9	ug/L	0.300	1.00
108-88-3	Toluene		46.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		52.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		47.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		161	ug/L	1.50	5.00
75-01-4	Vinyl chloride		52.7	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		48.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		47.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		93.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4800	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		49.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.1	ug/L	0.300	1.00
95-47-6	o-Xylene		46.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		48.7	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		44.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		47.9	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054619**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 10:21**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 10:21**				
Data File:	**032114V6\6A503LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		48.9	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		44.5	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	51.6	50.0	ug/L	103	(80%-120%)
Toluene-d8	49.2	50.0	ug/L	98.3	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054620**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 11:48**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 11:48**				
Data File:	**032114V6\6A506SHAR.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
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		52.1	ug/L	0.200	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		248	ug/L	1.50	5.00
107-13-1	Acrylonitrile		259	ug/L	1.00	5.00
107-05-1	Allyl chloride		225	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054620**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 11:48**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 11:48**				
Data File:	**032114V6\6A506SHAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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		230	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		2550	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		246	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		256	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		270	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203054620**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 11:48**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 11:48**				
Data File:	**032114V6\6A506SHAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.8	50.0	ug/L	106	(78%-124%)
Bromofluorobenzene	55.0	50.0	ug/L	110	(80%-120%)
Toluene-d8	49.8	50.0	ug/L	99.5	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054621**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:28**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:28**				
Data File:	**032114V6\6A524.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
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		52.5	ug/L	0.200	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		220	ug/L	1.50	5.00
107-13-1	Acrylonitrile		248	ug/L	1.00	5.00
107-05-1	Allyl chloride		236	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054621**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:28**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:28**				
Data File:	**032114V6\6A524.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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		229	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		2340	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		243	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		248	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		253	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		273	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054621**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:28**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:28**				
Data File:	**032114V6\6A524.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.7	50.0	ug/L	109	(78%-124%)
Bromofluorobenzene	55.2	50.0	ug/L	110	(80%-120%)
Toluene-d8	50.3	50.0	ug/L	101	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054622**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:57**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:57**				
Data File:	**032114V6\6A525.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
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		52.5	ug/L	0.200	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		217	ug/L	1.50	5.00
107-13-1	Acrylonitrile		249	ug/L	1.00	5.00
107-05-1	Allyl chloride		233	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054622**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:57**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:57**				
Data File:	**032114V6\6A525.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		231	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2410	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		246	ug/L	1.00	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		257	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		267	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203054622**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/21/2014 20:57**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/21/2014 20:57**				
Data File:	**032114V6\6A525.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.2	50.0	ug/L	108	(78%-124%)
Bromofluorobenzene	53.7	50.0	ug/L	107	(80%-120%)
Toluene-d8	49.9	50.0	ug/L	99.8	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064036**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 15:47**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 15:47**				
Data File:	**032214V6\6A609BAR.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
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	0.200	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	1.00	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064036**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 15:47**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 15:47**				
Data File:	**032214V6\6A609BAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	J	3.04	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064036**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 15:47**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 15:47**				
Data File:	**032214V6\6A609BAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	56.6	50.0	ug/L	113	(78%-124%)
Bromofluorobenzene	53.2	50.0	ug/L	106	(80%-120%)
Toluene-d8	50.1	50.0	ug/L	100	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064037**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 12:52**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 12:52**				
Data File:	**032214V6\6A603LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		49.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		56.9	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		52.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		53.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		53.2	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		42.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		45.9	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		44.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		49.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		50.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		51.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		46.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		46.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.1	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		266	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		49.3	ug/L	0.300	1.00
591-78-6	2-Hexanone		239	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		47.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		51.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		226	ug/L	1.50	5.00
67-64-1	Acetone		281	ug/L	3.00	10.0
75-05-8	Acetonitrile		1330	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	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		51.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		45.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		48.6	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.9	ug/L	0.300	1.00
75-25-2	Bromoform		49.0	ug/L	0.300	1.00
74-83-9	Bromomethane		48.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		297	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064037**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 12:52**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 12:52**				
Data File:	**032214V6\6A603LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		60.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		47.2	ug/L	0.300	1.00
75-00-3	Chloroethane		42.8	ug/L	0.300	1.00
67-66-3	Chloroform		52.8	ug/L	0.300	1.00
74-87-3	Chloromethane		49.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		46.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		49.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		40.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		35.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		49.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.0	ug/L	0.300	1.00
74-88-4	Iodomethane		270	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		51.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	B	49.4	ug/L	3.00	10.0
91-20-3	Naphthalene		44.0	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		47.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		52.7	ug/L	0.300	1.00
108-88-3	Toluene		48.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		56.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		161	ug/L	1.50	5.00
75-01-4	Vinyl chloride		54.5	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		51.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		49.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		98.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5380	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		53.4	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		52.5	ug/L	0.300	1.00
95-47-6	o-Xylene		49.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		51.9	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		45.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.3	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064037**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 12:52**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 12:52**				
Data File:	**032214V6\6A603LAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		52.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		45.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.3	50.0	ug/L	107	(78%-124%)
Bromofluorobenzene	51.9	50.0	ug/L	104	(80%-120%)
Toluene-d8	49.7	50.0	ug/L	99.5	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064038**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 14:49**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 14:49**				
Data File:	**032214V6\6A607SHAR.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
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		51.8	ug/L	0.200	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		225	ug/L	1.50	5.00
107-13-1	Acrylonitrile		251	ug/L	1.00	5.00
107-05-1	Allyl chloride		221	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064038**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 14:49**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 14:49**				
Data File:	**032214V6\6A607SHAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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		230	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		2510	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		246	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		254	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		261	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		264	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
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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203064038**				
Client Sample:	**QC for batch 1374437**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1374437**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1374437**	**Inst:**	**VOA6.I**	**Dilution:**	**1**
Run Date:	**03/22/2014 14:49**	**Analyst:**	**GRB2**	**Purge Vol:**	**5 mL**
Prep Date:	**03/22/2014 14:49**				
Data File:	**032214V6\6A607SHAR.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	53.6	50.0	ug/L	107	(78%-124%)
Bromofluorobenzene	54.3	50.0	ug/L	109	(80%-120%)
Toluene-d8	49.0	50.0	ug/L	98.0	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
08-APR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	SW846 8260B DOE-AL	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1374437	See Below		

Potentially affected work order(s)(SDG): 344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960)

Application Issues:

Failed Recovery for Surrogate or Tracer

Failed RPD for MS/MSD, or PS/PSD

Sample Analyzed out of Holding

Failed Recovery for LCS/LCSD

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. QC sample 1203054618MSD did not pass recoveries for all target analytes.	1. The associated MS passed recoveries near the upper end of the limits.
2. Sample Analyzed out of Holding: 344291 004,009,013,018 344293 004,009 344296 004,013,017,022 344332 004,009,013,018 QC 1203054617MS/618MSD and 1203054621MS/622MSD	2. The samples were analyzed within the two times the hold time criteria.
3. QC samples 1203054619LCS and 1203064037LCS did not pass spike recoveries for all analytes.	3. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. Please see the Form III's in the deliverable.
4. QC samples 1203054617MS and 1203054618MSD did not have acceptable RPD criteria for all analytes.	4. The MSD did not pass all recoveries. The MS passed recoveries near the upper end of the limits. The results are reported.
5. Sample 344291018 recovered for Bromofluorobenzene at 122.2%. Sample 344332018 recovered for Bromofluorobenzene at 121.5%. The limits are 80-120%.	5. The samples were re-analyzed passed two times the holding period with a long/short LCS pair that had six analytes analytes that were biased low. They analytes that were biased low are 1,2,3-Trichloropropane 71.6% (76-120); 4-Methyl-2-pentanone 73.6% (75-130); Acetonitrile 62.2% (63-131), Acryolinitrile 72.2% (74-122), Propionitrile 71% 973%-124%) and Isobutyl alcohol 69.3% (72-133). The surrogates passed recoveries in the re-analysis. The initial results are reported.

Originator's Name:

Gelester Baskett 08-APR-14

Data Validator/Group Leader:

Erin Haubert 08-APR-14

Semi-Volatile Analysis

Case Narrative

Semi-Volatile Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**
Analytical Method:	SW846 3510C/8270D
Prep Method:	SW846 3510C
Analytical Batch Number:	1372003
Prep Batch Number:	1372002

Sample Analysis

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

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203048937	Method Blank (MB)
1203048938	Laboratory Control Sample (LCS)
1203048939	344332004(CAWA-14-54782) Matrix Spike (MS)
1203048940	344332004(CAWA-14-54782) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-009 REV# 32.

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

Calibration Information

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

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in

the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

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

CCV Requirements
All Calibration Verification Standards (CCV) did not meet the acceptance criteria as outlined in Method 8270D. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. Detected concentrations of these analytes should be considered as estimated.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG in this batch met the acceptance criteria.

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

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

QC Sample Designation
Sample 344332004 (CAWA-14-54782) was selected for analysis as the matrix spike and matrix spike duplicate.

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

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

Technical Information:

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

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. All reported compound mass spectra met the detection specifications in the method.

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

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

Miscellaneous Information:

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. Manual integrations, if any, are included with the raw data.

TIC Comment
Tentatively identified compounds (TIC) may be requested for samples 1203048937 (MB), 344332004 (CAWA-14-54782) and 344332013 (CAWA-14-54783) in this delivery group/work order. Please note that non-requested calibrated analytes detected in a client sample may be reported on the Form 1/Certificate of Analysis as TICs. TIC data, if requested, are included on the Sample Data Summary (Form 1) and are also included with the sample raw data.

Additional Comments
The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

Due to rounding differences in the calculation, the data reported in the Surrogate Recovery Report may differ slightly from the raw data. Due to software issue, the raw data may not correctly display the updated SPC limits. Please see Sample Data Summary Report and Surrogate Recovery Report for the correct surrogate acceptance limits.

Electronic Package Comment

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

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

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description

MSD7.I	Agilent 6890/5973 GC/MS w/ 7673 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014−2960 GEL Work Order: 344332

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: Barbara Bailey **Name: Barbara Bailey**

Date: 01 APR 2014 **Title: Data Validator**

Sample Data Summary

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54782**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 15:10**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1209.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120−82−1	1,2,4−Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95−50−1	1,2−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122−66−7	Azobenzene	U	10.0	ug/L	3.00	10.0
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106−46−7	1,4−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123−91−1	1,4−Dioxane	U	10.0	ug/L	3.00	10.0
58−90−2	2,3,4,6−Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95−95−4	2,4,5−Trichlorophenol	U	10.0	ug/L	3.00	10.0
88−06−2	2,4,6−Trichlorophenol	U	10.0	ug/L	3.00	10.0
120−83−2	2,4−Dichlorophenol	U	10.0	ug/L	3.00	10.0
105−67−9	2,4−Dimethylphenol	U	10.0	ug/L	3.00	10.0
51−28−5	2,4−Dinitrophenol	U	20.0	ug/L	5.00	20.0
121−14−2	2,4−Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606−20−2	2,6−Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91−58−7	2−Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95−57−8	2−Chlorophenol	U	10.0	ug/L	3.00	10.0
534−52−1	2−Methyl−4,6−dinitrophenol	U	10.0	ug/L	3.00	10.0
88−75−5	2−Nitrophenol	U	10.0	ug/L	3.00	10.0
91−94−1	3,3'−Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101−55−3	4−Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59−50−7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline	U	10.0	ug/L	3.30	10.0
7005−72−3	4−Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100−02−7	4−Nitrophenol	U	10.0	ug/L	3.00	10.0
62−53−3	Aniline	U	10.0	ug/L	4.20	10.0
1912−24−9	Atrazine	U	10.0	ug/L	3.00	10.0
92−87−5	Benzidine	U	10.0	ug/L	3.90	10.0
65−85−0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100−51−6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85−68−7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
84−74−2	Di−n−butylphthalate	U	10.0	ug/L	3.00	10.0
117−84−0	Di−n−octylphthalate	U	10.0	ug/L	3.00	10.0
132−64−9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84−66−2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131−11−3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88−85−7	Dinoseb	U	10.0	ug/L	3.00	10.0

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54782**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 15:10**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1209.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine	U	10.0	ug/L	3.00	10.0
87−68−3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77−47−4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67−72−1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
78−59−1	Isophorone	U	10.0	ug/L	3.50	10.0
62−75−9	N−Methyl−N−nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924−16−3	N−Nitrosodi−n−butylamine	U	10.0	ug/L	3.00	10.0
55−18−5	N−Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	U	10.0	ug/L	3.00	10.0
930−55−2	N−Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
98−95−3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608−93−5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108−95−2	Phenol	U	10.0	ug/L	3.00	10.0
110−86−1	Pyridine	U	10.0	ug/L	3.00	10.0
111−91−1	bis(2−Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111−44−4	bis(2−Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
39638−32−9	bis(2−Chloroisopropyl)ether	U	10.0	ug/L	3.00	10.0
117−81−7	bis(2−Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794−96−9	m,p−Cresols	U	10.0	ug/L	3.70	10.0
99−09−2	3−Nitroaniline *m−Nitroaniline*	U	10.0	ug/L	3.00	10.0
95−48−7	o−Cresol	U	10.0	ug/L	3.00	10.0
88−74−4	2−Nitroaniline *o−Nitroaniline*	U	10.0	ug/L	3.00	10.0
100−01−6	4−Nitroaniline *p−Nitroaniline*	U	10.0	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	70.2	100	ug/L	70.2	(26%−129%)
2−Fluorobiphenyl	39.9	50.0	ug/L	79.7	(32%−102%)
2−Fluorophenol	42.6	100	ug/L	42.6	(10%−78%)
Nitrobenzene−d5	42.3	50.0	ug/L	84.6	(36%−125%)
Phenol−d5	26.6	100	ug/L	26.6	(10%−104%)
p−Terphenyl−d14	31.7	50.0	ug/L	63.3	(34%−135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000563−80−4	2−Butanone, 3−methyl−	2.136	49.5	ug/L	86	NJ
000994−05−8	Butane, 2−methoxy−2−methyl−	2.265	59	ug/L	90	NJ

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332004**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54782**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 15:10**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1209.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	2.302	5.57	ug/L	0	J
	unknown	3.741	6.59	ug/L	0	J

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54783**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 16:45**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1212.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene	U	10.2	ug/L	3.06	10.2
120−82−1	1,2,4−Trichlorobenzene	U	10.2	ug/L	3.06	10.2
95−50−1	1,2−Dichlorobenzene	U	10.2	ug/L	3.06	10.2
122−66−7	Azobenzene	U	10.2	ug/L	3.06	10.2
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene	U	10.2	ug/L	3.06	10.2
106−46−7	1,4−Dichlorobenzene	U	10.2	ug/L	3.06	10.2
123−91−1	1,4−Dioxane	U	10.2	ug/L	3.06	10.2
58−90−2	2,3,4,6−Tetrachlorophenol	U	10.2	ug/L	3.06	10.2
95−95−4	2,4,5−Trichlorophenol	U	10.2	ug/L	3.06	10.2
88−06−2	2,4,6−Trichlorophenol	U	10.2	ug/L	3.06	10.2
120−83−2	2,4−Dichlorophenol	U	10.2	ug/L	3.06	10.2
105−67−9	2,4−Dimethylphenol	U	10.2	ug/L	3.06	10.2
51−28−5	2,4−Dinitrophenol	U	20.4	ug/L	5.10	20.4
121−14−2	2,4−Dinitrotoluene	U	10.2	ug/L	3.06	10.2
606−20−2	2,6−Dinitrotoluene	U	10.2	ug/L	3.06	10.2
91−58−7	2−Chloronaphthalene	U	1.02	ug/L	0.418	1.02
95−57−8	2−Chlorophenol	U	10.2	ug/L	3.06	10.2
534−52−1	2−Methyl−4,6−dinitrophenol	U	10.2	ug/L	3.06	10.2
88−75−5	2−Nitrophenol	U	10.2	ug/L	3.06	10.2
91−94−1	3,3'−Dichlorobenzidine	U	10.2	ug/L	3.06	10.2
101−55−3	4−Bromophenylphenylether	U	10.2	ug/L	3.06	10.2
59−50−7	Parachlorometa cresol	U	10.2	ug/L	3.06	10.2
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline	U	10.2	ug/L	3.37	10.2
7005−72−3	4−Chlorophenylphenylether	U	10.2	ug/L	3.06	10.2
100−02−7	4−Nitrophenol	U	10.2	ug/L	3.06	10.2
62−53−3	Aniline	U	10.2	ug/L	4.29	10.2
1912−24−9	Atrazine	U	10.2	ug/L	3.06	10.2
92−87−5	Benzidine	U	10.2	ug/L	3.98	10.2
65−85−0	Benzoic acid	U	20.4	ug/L	6.12	20.4
100−51−6	Benzyl alcohol	U	10.2	ug/L	3.06	10.2
85−68−7	Butylbenzylphthalate	U	10.2	ug/L	3.06	10.2
84−74−2	Di−n−butylphthalate	U	10.2	ug/L	3.06	10.2
117−84−0	Di−n−octylphthalate	U	10.2	ug/L	3.06	10.2
132−64−9	Dibenzofuran	U	10.2	ug/L	3.06	10.2
84−66−2	Diethylphthalate	U	10.2	ug/L	3.06	10.2
131−11−3	Dimethylphthalate	U	10.2	ug/L	3.06	10.2
88−85−7	Dinoseb	U	10.2	ug/L	3.06	10.2

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54783**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 16:45**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1212.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine	U	10.2	ug/L	3.06	10.2
87−68−3	Hexachlorobutadiene	U	10.2	ug/L	3.06	10.2
77−47−4	Hexachlorocyclopentadiene	U	10.2	ug/L	3.06	10.2
67−72−1	Hexachloroethane	U	10.2	ug/L	3.06	10.2
78−59−1	Isophorone	U	10.2	ug/L	3.57	10.2
62−75−9	N−Methyl−N−nitrosomethylamine	U	10.2	ug/L	3.06	10.2
924−16−3	N−Nitrosodi−n−butylamine	U	10.2	ug/L	3.06	10.2
55−18−5	N−Nitrosodiethylamine	U	10.2	ug/L	3.06	10.2
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	U	10.2	ug/L	3.06	10.2
930−55−2	N−Nitrosopyrrolidine	U	10.2	ug/L	3.06	10.2
98−95−3	Nitrobenzene	U	10.2	ug/L	3.06	10.2
608−93−5	Pentachlorobenzene	U	10.2	ug/L	3.06	10.2
108−95−2	Phenol	U	10.2	ug/L	3.06	10.2
110−86−1	Pyridine	U	10.2	ug/L	3.06	10.2
111−91−1	bis(2−Chloroethoxy)methane	U	10.2	ug/L	3.06	10.2
111−44−4	bis(2−Chloroethyl) ether	U	10.2	ug/L	3.06	10.2
39638−32−9	bis(2−Chloroisopropyl)ether	U	10.2	ug/L	3.06	10.2
117−81−7	bis(2−Ethylhexyl)phthalate	U	10.2	ug/L	3.06	10.2
65794−96−9	m,p−Cresols	U	10.2	ug/L	3.78	10.2
99−09−2	3−Nitroaniline *m−Nitroaniline*	U	10.2	ug/L	3.06	10.2
95−48−7	o−Cresol	U	10.2	ug/L	3.06	10.2
88−74−4	2−Nitroaniline *o−Nitroaniline*	U	10.2	ug/L	3.06	10.2
100−01−6	4−Nitroaniline *p−Nitroaniline*	U	10.2	ug/L	3.06	10.2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	72.9	102	ug/L	71.5	(26%−129%)
2−Fluorobiphenyl	40.2	51.0	ug/L	78.8	(32%−102%)
2−Fluorophenol	46.0	102	ug/L	45.0	(10%−78%)
Nitrobenzene−d5	44.4	51.0	ug/L	87.0	(36%−125%)
Phenol−d5	29.7	102	ug/L	29.1	(10%−104%)
p−Terphenyl−d14	24.4	51.0	ug/L	47.8	(34%−135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000067−66−3	Trichloromethane	1.943	44.5	ug/L	95	NJ
000563−80−4	2−Butanone, 3−methyl−	2.136	49.8	ug/L	86	NJ

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332013**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA−14−54783**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 16:45**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**980 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1212.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000994−05−8	Butane, 2−methoxy−2−methyl−	2.264	49.1	ug/L	90	NJ
	unknown	2.302	6.86	ug/L	0	J
	unknown	3.741	6.79	ug/L	0	J

Quality Control Summary

Semi−Volatile

Surrogate Recovery Report

SDG Number: 2014−2960

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203048937	MB for batch 1372002	42	28	86	72	72	70
1203048938	LCS for batch 1372002	48	29	95	79	87	96
344332004	CAWA−14−54782	43	27	85	80	70	63
1203048939	CAWA−14−54782MS	60	44	90	81	81	86
1203048940	CAWA−14−54782MSD	60	41	90	81	81	80
344332013	CAWA−14−54783	45	29	87	79	71	48

Surrogate		Acceptance Limits
2FP	= 2−Fluorophenol	(10%−78%)
PHL	= Phenol−d5	(10%−104%)
NBZ	= Nitrobenzene−d5	(36%−125%)
FBP	= 2−Fluorobiphenyl	(32%−102%)
TBP	= 2,4,6−Tribromophenol	(26%−129%)
TPH	= p−Terphenyl−d14	(34%−135%)

* Recovery outside Acceptance Limits
\# Column to be used to flag recovery values
D Sample Diluted

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **LCS for batch 1372002**
Lab Sample ID **1203048938**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/12/2014 14:07**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62−75−9	LCS	N−Methyl−N−nitrosomethylan	50.0	0.0	29.1	58	18−75
110−86−1	LCS	Pyridine	50.0	0.0	32.4	65	11−88
62−53−3	LCS	Aniline	50.0	0.0	43.7	87	35−107
108−95−2	LCS	Phenol	50.0	0.0	15.0	30	13−77
111−44−4	LCS	bis(2−Chloroethyl) ether	50.0	0.0	45.4	91	35−111
95−57−8	LCS	2−Chlorophenol	50.0	0.0	37.7	75	39−99
541−73−1	LCS	1,3−Dichlorobenzene	50.0	0.0	33.1	66	25−100
106−46−7	LCS	1,4−Dichlorobenzene	50.0	0.0	32.8	66	24−88
95−50−1	LCS	1,2−Dichlorobenzene	50.0	0.0	32.9	66	27−87
39638−32−9	LCS	bis(2−Chloroisopropyl)ether	50.0	0.0	37.4	75	23−120
100−51−6	LCS	Benzyl alcohol	50.0	0.0	27.8	56	33−90
95−48−7	LCS	o−Cresol	50.0	0.0	31.9	64	32−90
65794−96−9	LCS	m,p−Cresols	50.0	0.0	27.8	56	28−100
621−64−7	LCS	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	50.0	0.0	42.0	84	39−113
67−72−1	LCS	Hexachloroethane	50.0	0.0	31.6	63	20−85
98−95−3	LCS	Nitrobenzene	50.0	0.0	48.1	96	41−119
78−59−1	LCS	Isophorone	50.0	0.0	46.2	92	49−133
88−75−5	LCS	2−Nitrophenol	50.0	0.0	44.5	89	42−111
105−67−9	LCS	2,4−Dimethylphenol	50.0	0.0	34.5	69	43−99
111−91−1	LCS	bis(2−Chloroethoxy)methane	50.0	0.0	45.0	90	44−109
120−83−2	LCS	2,4−Dichlorophenol	50.0	0.0	37.5	75	45−106
65−85−0	LCS	Benzoic acid	100	0.0	25.9	26	10−81

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **LCS for batch 1372002**
Lab Sample ID **1203048938**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/12/2014 14:07**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106−47−8	LCS	4−Chloroaniline	50.0	0.0	43.4	87	50−122
87−68−3	LCS	Hexachlorobutadiene	50.0	0.0	30.3	61	19−92
59−50−7	LCS	Parachlorometa cresol *4−Chloro−3−methylphenol*	50.0	0.0	42.9	86	46−111
77−47−4	LCS	Hexachlorocyclopentadiene	50.0	0.0	28.7	57	15−72
88−06−2	LCS	2,4,6−Trichlorophenol	50.0	0.0	44.2	88	41−109
95−95−4	LCS	2,4,5−Trichlorophenol	50.0	0.0	34.9	70	41−111
91−58−7	LCS	2−Chloronaphthalene	50.0	0.0	35.2	70	36−98
88−74−4	LCS	2−Nitroaniline *o−Nitroaniline*	50.0	0.0	46.0	92	44−117
99−09−2	LCS	3−Nitroaniline *m−Nitroaniline*	50.0	0.0	44.0	88	45−124
131−11−3	LCS	Dimethylphthalate	50.0	0.0	50.7	101	53−112
606−20−2	LCS	2,6−Dinitrotoluene	50.0	0.0	46.9	94	52−117
121−14−2	LCS	2,4−Dinitrotoluene	50.0	0.0	48.5	97	45−124
51−28−5	LCS	2,4−Dinitrophenol	50.0	0.0	46.8	94	19−110
132−64−9	LCS	Dibenzofuran	50.0	0.0	43.2	86	45−107
58−90−2	LCS	2,3,4,6−Tetrachlorophenol	50.0	0.0	42.6	85	45−120
84−66−2	LCS	Diethylphthalate	50.0	0.0	50.6	101	51−116
100−02−7	LCS	4−Nitrophenol	50.0	0.0	8.04	16	16−77
7005−72−3	LCS	4−Chlorophenylphenylether	50.0	0.0	44.4	89	40−114
100−01−6	LCS	4−Nitroaniline *p−Nitroaniline*	50.0	0.0	48.1	96	38−133
534−52−1	LCS	2−Methyl−4,6−dinitrophenol	50.0	0.0	46.0	92	34−114
122−39−4	LCS	Diphenylamine	50.0	0.0	45.5	91	47−111
122−66−7	LCS	Azobenzene *1,2−Diphenylhydrazine*	50.0	0.0	44.9	90	40−112

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **LCS for batch 1372002**
Lab Sample ID **1203048938**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/12/2014 14:07**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
101−55−3	LCS	4−Bromophenylphenylether	50.0	0.0	42.0	84	41−113
84−74−2	LCS	Di−n−butylphthalate	50.0	0.0	39.9	80	49−116
85−68−7	LCS	Butylbenzylphthalate	50.0	0.0	47.4	95	40−122
117−81−7	LCS	bis(2−Ethylhexyl)phthalate	50.0	0.0	44.4	89	37−124
117−84−0	LCS	Di−n−octylphthalate	50.0	0.0	39.1	78	33−122
123−91−1	LCS	1,4−Dioxane	50.0	0.0	30.3	61	26−73
930−55−2	LCS	N−Nitrosopyrrolidine	50.0	0.0	40.1	80	42−106
95−94−3	LCS	1,2,4,5−Tetrachlorobenzene	50.0	0.0	32.8	66	36−95
1912−24−9	LCS	Atrazine	50.0	0.0	45.3	91	47−115
92−87−5	LCS	Benzidine	100	0.0	52.8	53	10−124
91−94−1	LCS	3,3'−Dichlorobenzidine	50.0	0.0	37.1	74	31−113
120−82−1	LCS	1,2,4−Trichlorobenzene	50.0	0.0	33.4	67	26−92

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MS**
Lab Sample ID **1203048939**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/12/2014 15:42**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
62−75−9	MS	N−Methyl−N−nitrosomethylan	116	0.00	U	86.7	75	21−88
110−86−1	MS	Pyridine	116	0.00	U	93.1	80	14−94
62−53−3	MS	Aniline	116	0.00	U	107	92	24−109
108−95−2	MS	Phenol	116	0.00	U	51.6	44	10−88
111−44−4	MS	bis(2−Chloroethyl) ether	116	0.00	U	103	89	25−114
95−57−8	MS	2−Chlorophenol	116	0.00	U	89.7	77	31−103
541−73−1	MS	1,3−Dichlorobenzene	116	0.00	U	77.4	67	18−83
106−46−7	MS	1,4−Dichlorobenzene	116	0.00	U	76.5	66	20−86
95−50−1	MS	1,2−Dichlorobenzene	116	0.00	U	80.5	69	21−85
39638−32−9	MS	bis(2−Chloroisopropyl)ether	116	0.00	U	88.5	76	16−121
100−51−6	MS	Benzyl alcohol	116	0.00	U	73.8	64	31−100
95−48−7	MS	o−Cresol	116	0.00	U	85.5	74	26−97
65794−96−9	MS	m,p−Cresols	116	0.00	U	76.6	66	24−110
621−64−7	MS	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	116	0.00	U	99.6	86	29−116
67−72−1	MS	Hexachloroethane	116	0.00	U	71.7	62	17−82
98−95−3	MS	Nitrobenzene	116	0.00	U	109	94	32−126
78−59−1	MS	Isophorone	116	0.00	U	102	88	36−139
88−75−5	MS	2−Nitrophenol	116	0.00	U	99.3	85	29−117
105−67−9	MS	2,4−Dimethylphenol	116	0.00	U	85.1	73	28−107
111−91−1	MS	bis(2−Chloroethoxy)methane	116	0.00	U	103	88	34−112
120−83−2	MS	2,4−Dichlorophenol	116	0.00	U	86.4	74	34−111
65−85−0	MS	Benzoic acid	233	0.00	U	86.4	37	10−105

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MS**
Lab Sample ID **1203048939**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/12/2014 15:42**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106−47−8	MS	4−Chloroaniline	116	0.00	U	94.3	81	28−123
87−68−3	MS	Hexachlorobutadiene	116	0.00	U	67.3	58	11−97
59−50−7	MS	Parachlorometa cresol *4−Chloro−3−methylphenol*	116	0.00	U	100	86	31−119
77−47−4	MS	Hexachlorocyclopentadiene	116	0.00	U	65.2	56	14−73
88−06−2	MS	2,4,6−Trichlorophenol	116	0.00	U	101	87	31−113
95−95−4	MS	2,4,5−Trichlorophenol	116	0.00	U	77.6	67	30−117
91−58−7	MS	2−Chloronaphthalene	116	0.00	U	83.4	72	30−97
88−74−4	MS	2−Nitroaniline *o−Nitroaniline*	116	0.00	U	101	87	28−122
99−09−2	MS	3−Nitroaniline *m−Nitroaniline*	116	0.00	U	99.3	85	29−125
131−11−3	MS	Dimethylphthalate	116	0.00	U	113	97	41−116
606−20−2	MS	2,6−Dinitrotoluene	116	0.00	U	105	90	40−123
121−14−2	MS	2,4−Dinitrotoluene	116	0.00	U	106	91	34−126
51−28−5	MS	2,4−Dinitrophenol	116	0.00	U	98.5	85	17−110
132−64−9	MS	Dibenzofuran	116	0.00	U	98.6	85	36−107
58−90−2	MS	2,3,4,6−Tetrachlorophenol	116	0.00	U	91.6	79	29−126
84−66−2	MS	Diethylphthalate	116	0.00	U	112	97	41−117
100−02−7	MS	4−Nitrophenol	116	0.00	U	30.9	27	16−71
7005−72−3	MS	4−Chlorophenylphenylether	116	0.00	U	98.9	85	30−112
100−01−6	MS	4−Nitroaniline *p−Nitroaniline*	116	0.00	U	112	96	25−133
534−52−1	MS	2−Methyl−4,6−dinitrophenol	116	0.00	U	102	88	22−118
122−39−4	MS	Diphenylamine	116	0.00	U	98.7	85	34−111
122−66−7	MS	Azobenzene *1,2−Diphenylhydrazine*	116	0.00	U	98.8	85	30−112

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MS**
Lab Sample ID **1203048939**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/12/2014 15:42**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
101−55−3	MS	4−Bromophenylphenylether	116	0.00	U	91.4	79	32−111
84−74−2	MS	Di−n−butylphthalate	116	0.00	U	89.3	77	35−118
85−68−7	MS	Butylbenzylphthalate	116	0.00	U	98.7	85	29−121
117−81−7	MS	bis(2−Ethylhexyl)phthalate	116	0.00	U	94.1	81	29−120
117−84−0	MS	Di−n−octylphthalate	116	0.00	U	92.0	79	25−118
123−91−1	MS	1,4−Dioxane	116	0.00	U	87.5	75	26−88
930−55−2	MS	N−Nitrosopyrrolidine	116	0.00	U	99.6	86	42−110
95−94−3	MS	1,2,4,5−Tetrachlorobenzene	116	0.00	U	77.6	67	29−96
1912−24−9	MS	Atrazine	116	0.00	U	107	92	33−121
92−87−5	MS	Benzidine	233	0.00	U	172	74	10−117
91−94−1	MS	3,3'−Dichlorobenzidine	116	0.00	U	90.0	77	22−111
120−82−1	MS	1,2,4−Trichlorobenzene	116	0.00	U	75.2	65	20−90

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MSD**
Lab Sample ID **1203048940**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **03/12/2014 16:13**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62−75−9	MSD	N−Methyl−N−nitrosomethylan	116	0.00	U	87.9	76	21−88	1	0−30
110−86−1	MSD	Pyridine	116	0.00	U	94.2	81	14−94	1	0−30
62−53−3	MSD	Aniline	116	0.00	U	99.3	85	24−109	7	0−30
108−95−2	MSD	Phenol	116	0.00	U	47.5	41	10−88	8	0−30
111−44−4	MSD	bis(2−Chloroethyl) ether	116	0.00	U	95.9	82	25−114	7	0−30
95−57−8	MSD	2−Chlorophenol	116	0.00	U	85.1	73	31−103	5	0−30
541−73−1	MSD	1,3−Dichlorobenzene	116	0.00	U	76.7	66	18−83	1	0−30
106−46−7	MSD	1,4−Dichlorobenzene	116	0.00	U	76.9	66	20−86	1	0−30
95−50−1	MSD	1,2−Dichlorobenzene	116	0.00	U	78.3	67	21−85	3	0−30
39638−32−9	MSD	bis(2−Chloroisopropyl)ether	116	0.00	U	80.7	69	16−121	9	0−30
100−51−6	MSD	Benzyl alcohol	116	0.00	U	68.6	59	31−100	7	0−30
95−48−7	MSD	o−Cresol	116	0.00	U	80.3	69	26−97	6	0−30
65794−96−9	MSD	m,p−Cresols	116	0.00	U	72.8	63	24−110	5	0−30
621−64−7	MSD	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	116	0.00	U	93.1	80	29−116	7	0−30
67−72−1	MSD	Hexachloroethane	116	0.00	U	71.6	62	17−82	0	0−30
98−95−3	MSD	Nitrobenzene	116	0.00	U	108	92	32−126	1	0−30
78−59−1	MSD	Isophorone	116	0.00	U	107	92	36−139	4	0−30
88−75−5	MSD	2−Nitrophenol	116	0.00	U	98.4	85	29−117	1	0−30
105−67−9	MSD	2,4−Dimethylphenol	116	0.00	U	85.4	73	28−107	0	0−30
111−91−1	MSD	bis(2−Chloroethoxy)methane	116	0.00	U	102	88	34−112	1	0−30
120−83−2	MSD	2,4−Dichlorophenol	116	0.00	U	90.3	78	34−111	4	0−30
65−85−0	MSD	Benzoic acid	233	0.00	U	101	43	10−105	16	0−30

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MSD**
Lab Sample ID **1203048940**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **03/12/2014 16:13**
Prep Batch ID: **1372002**
Batch ID: **1372003**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106−47−8	MSD	4−Chloroaniline	116	0.00	U	98.3	85	28−123	4	0−30
87−68−3	MSD	Hexachlorobutadiene	116	0.00	U	67.7	58	11−97	1	0−30
59−50−7	MSD	Parachlorometa cresol *4−Chloro−3−methylphenol*	116	0.00	U	103	88	31−119	3	0−30
77−47−4	MSD	Hexachlorocyclopentadiene	116	0.00	U	67.3	58	14−73	3	0−30
88−06−2	MSD	2,4,6−Trichlorophenol	116	0.00	U	98.9	85	31−113	2	0−30
95−95−4	MSD	2,4,5−Trichlorophenol	116	0.00	U	78.6	68	30−117	1	0−30
91−58−7	MSD	2−Chloronaphthalene	116	0.00	U	81.2	70	30−97	3	0−30
88−74−4	MSD	2−Nitroaniline *o−Nitroaniline*	116	0.00	U	103	89	28−122	2	0−30
99−09−2	MSD	3−Nitroaniline *m−Nitroaniline*	116	0.00	U	102	87	29−125	2	0−30
131−11−3	MSD	Dimethylphthalate	116	0.00	U	110	95	41−116	3	0−30
606−20−2	MSD	2,6−Dinitrotoluene	116	0.00	U	101	87	40−123	4	0−30
121−14−2	MSD	2,4−Dinitrotoluene	116	0.00	U	105	90	34−126	1	0−30
51−28−5	MSD	2,4−Dinitrophenol	116	0.00	U	107	92	17−110	8	0−30
132−64−9	MSD	Dibenzofuran	116	0.00	U	96.7	83	36−107	2	0−30
58−90−2	MSD	2,3,4,6−Tetrachlorophenol	116	0.00	U	88.8	76	29−126	3	0−30
84−66−2	MSD	Diethylphthalate	116	0.00	U	107	92	41−117	5	0−30
100−02−7	MSD	4−Nitrophenol	116	0.00	U	37.3	32	16−71	19	0−30
7005−72−3	MSD	4−Chlorophenylphenylether	116	0.00	U	93.9	81	30−112	5	0−30
100−01−6	MSD	4−Nitroaniline *p−Nitroaniline*	116	0.00	U	117	100	25−133	4	0−30
534−52−1	MSD	2−Methyl−4,6−dinitrophenol	116	0.00	U	105	91	22−118	4	0−30
122−39−4	MSD	Diphenylamine	116	0.00	U	95.9	83	34−111	3	0−30
122−66−7	MSD	Azobenzene *1,2−Diphenylhydrazine*	116	0.00	U	96.1	83	30−112	3	0−30

Semi−Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2014−2960**
Client ID: **CAWA−14−54782MSD**
Lab Sample ID **1203048940**
Instrument: **MSD7.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **03/12/2014 16:13**
Dilution: 1
Prep Batch ID: **1372002**
Batch ID: **1372003**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
101−55−3	MSD	4−Bromophenylphenylether	116	0.00	U	88.8	76	32−111	3	0−30
84−74−2	MSD	Di−n−butylphthalate	116	0.00	U	89.7	77	35−118	0	0−30
85−68−7	MSD	Butylbenzylphthalate	116	0.00	U	92.7	80	29−121	6	0−30
117−81−7	MSD	bis(2−Ethylhexyl)phthalate	116	0.00	U	90.3	78	29−120	4	0−30
117−84−0	MSD	Di−n−octylphthalate	116	0.00	U	93.2	80	25−118	1	0−30
123−91−1	MSD	1,4−Dioxane	116	0.00	U	90.0	77	26−88	3	0−30
930−55−2	MSD	N−Nitrosopyrrolidine	116	0.00	U	95.9	82	42−110	4	0−30
95−94−3	MSD	1,2,4,5−Tetrachlorobenzene	116	0.00	U	76.2	66	29−96	2	0−30
1912−24−9	MSD	Atrazine	116	0.00	U	102	88	33−121	5	0−30
92−87−5	MSD	Benzidine	233	0.00	U	192	82	10−117	11	0−30
91−94−1	MSD	3,3'−Dichlorobenzidine	116	0.00	U	98.9	85	22−111	9	0−30
120−82−1	MSD	1,2,4−Trichlorobenzene	116	0.00	U	75.5	65	20−90	0	0−30

Method Blank Summary

SDG Number:	**2014−2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1372002**	**Instrument ID:**	**MSD7.I**	**Data File:**	**s031214.b\s7c1206.D**
Lab Sample ID:	**1203048937**	**Prep Date:**	**03/12/2014 04:00**	**Analyzed:**	**03/12/14 13:35**
Column:	**DB−5ms**				

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

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 1372002	1203048938	s031214.b\s7c1207.D	03/12/14	1407
02	CAWA−14−54782	344332004	s031214.b\s7c1209.D	03/12/14	1510
03	CAWA−14−54782MS	1203048939	s031214.b\s7c1210.D	03/12/14	1542
04	CAWA−14−54782MSD	1203048940	s031214.b\s7c1211.D	03/12/14	1613
05	CAWA−14−54783	344332013	s031214.b\s7c1212.D	03/12/14	1645

Quality Control Data

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048937**				
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1372002**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 13:35**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1206.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120−82−1	1,2,4−Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95−50−1	1,2−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122−66−7	Azobenzene	U	10.0	ug/L	3.00	10.0
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106−46−7	1,4−Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123−91−1	1,4−Dioxane	U	10.0	ug/L	3.00	10.0
58−90−2	2,3,4,6−Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95−95−4	2,4,5−Trichlorophenol	U	10.0	ug/L	3.00	10.0
88−06−2	2,4,6−Trichlorophenol	U	10.0	ug/L	3.00	10.0
120−83−2	2,4−Dichlorophenol	U	10.0	ug/L	3.00	10.0
105−67−9	2,4−Dimethylphenol	U	10.0	ug/L	3.00	10.0
51−28−5	2,4−Dinitrophenol	U	20.0	ug/L	5.00	20.0
121−14−2	2,4−Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606−20−2	2,6−Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91−58−7	2−Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95−57−8	2−Chlorophenol	U	10.0	ug/L	3.00	10.0
534−52−1	2−Methyl−4,6−dinitrophenol	U	10.0	ug/L	3.00	10.0
88−75−5	2−Nitrophenol	U	10.0	ug/L	3.00	10.0
91−94−1	3,3'−Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101−55−3	4−Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59−50−7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline	U	10.0	ug/L	3.30	10.0
7005−72−3	4−Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100−02−7	4−Nitrophenol	U	10.0	ug/L	3.00	10.0
62−53−3	Aniline	U	10.0	ug/L	4.20	10.0
1912−24−9	Atrazine	U	10.0	ug/L	3.00	10.0
92−87−5	Benzidine	U	10.0	ug/L	3.90	10.0
65−85−0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100−51−6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85−68−7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
84−74−2	Di−n−butylphthalate	U	10.0	ug/L	3.00	10.0
117−84−0	Di−n−octylphthalate	U	10.0	ug/L	3.00	10.0
132−64−9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84−66−2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131−11−3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88−85−7	Dinoseb	U	10.0	ug/L	3.00	10.0

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048937**				
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1372002**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 13:35**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1206.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine	U	10.0	ug/L	3.00	10.0
87−68−3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77−47−4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67−72−1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
78−59−1	Isophorone	U	10.0	ug/L	3.50	10.0
62−75−9	N−Methyl−N−nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924−16−3	N−Nitrosodi−n−butylamine	U	10.0	ug/L	3.00	10.0
55−18−5	N−Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*	U	10.0	ug/L	3.00	10.0
930−55−2	N−Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
98−95−3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608−93−5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108−95−2	Phenol	U	10.0	ug/L	3.00	10.0
110−86−1	Pyridine	U	10.0	ug/L	3.00	10.0
111−91−1	bis(2−Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111−44−4	bis(2−Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
39638−32−9	bis(2−Chloroisopropyl)ether	U	10.0	ug/L	3.00	10.0
117−81−7	bis(2−Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794−96−9	m,p−Cresols	U	10.0	ug/L	3.70	10.0
99−09−2	3−Nitroaniline *m−Nitroaniline*	U	10.0	ug/L	3.00	10.0
95−48−7	o−Cresol	U	10.0	ug/L	3.00	10.0
88−74−4	2−Nitroaniline *o−Nitroaniline*	U	10.0	ug/L	3.00	10.0
100−01−6	4−Nitroaniline *p−Nitroaniline*	U	10.0	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	71.6	100	ug/L	71.6	(26%−129%)
2−Fluorobiphenyl	36.2	50.0	ug/L	72.5	(32%−102%)
2−Fluorophenol	42.2	100	ug/L	42.2	(10%−78%)
Nitrobenzene−d5	42.9	50.0	ug/L	85.8	(36%−125%)
Phenol−d5	28.2	100	ug/L	28.2	(10%−104%)
p−Terphenyl−d14	34.8	50.0	ug/L	69.6	(34%−135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	2.136	45.9	ug/L	0	J
000994−05−8	Butane, 2−methoxy−2−methyl−	2.264	45.7	ug/L	90	NJ

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048937**				
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1372002**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 13:35**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1206.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	2.302	6.46	ug/L	0	J
	unknown	3.741	6.29	ug/L	0	J

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048938**				
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1372002**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 14:07**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1207.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene		32.8	ug/L	3.00	10.0
120−82−1	1,2,4−Trichlorobenzene		33.4	ug/L	3.00	10.0
95−50−1	1,2−Dichlorobenzene		32.9	ug/L	3.00	10.0
122−66−7	Azobenzene		44.9	ug/L	3.00	10.0
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene		33.1	ug/L	3.00	10.0
106−46−7	1,4−Dichlorobenzene		32.8	ug/L	3.00	10.0
123−91−1	1,4−Dioxane		30.3	ug/L	3.00	10.0
58−90−2	2,3,4,6−Tetrachlorophenol		42.6	ug/L	3.00	10.0
95−95−4	2,4,5−Trichlorophenol		34.9	ug/L	3.00	10.0
88−06−2	2,4,6−Trichlorophenol		44.2	ug/L	3.00	10.0
120−83−2	2,4−Dichlorophenol		37.5	ug/L	3.00	10.0
105−67−9	2,4−Dimethylphenol		34.5	ug/L	3.00	10.0
51−28−5	2,4−Dinitrophenol		46.8	ug/L	5.00	20.0
121−14−2	2,4−Dinitrotoluene		48.5	ug/L	3.00	10.0
606−20−2	2,6−Dinitrotoluene		46.9	ug/L	3.00	10.0
91−58−7	2−Chloronaphthalene		35.2	ug/L	0.410	1.00
95−57−8	2−Chlorophenol		37.7	ug/L	3.00	10.0
534−52−1	2−Methyl−4,6−dinitrophenol		46.0	ug/L	3.00	10.0
88−75−5	2−Nitrophenol		44.5	ug/L	3.00	10.0
91−94−1	3,3'−Dichlorobenzidine		37.1	ug/L	3.00	10.0
101−55−3	4−Bromophenylphenylether		42.0	ug/L	3.00	10.0
59−50−7	Parachlorometa cresol		42.9	ug/L	3.00	10.0
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline		43.4	ug/L	3.30	10.0
7005−72−3	4−Chlorophenylphenylether		44.4	ug/L	3.00	10.0
100−02−7	4−Nitrophenol	J	8.04	ug/L	3.00	10.0
62−53−3	Aniline		43.7	ug/L	4.20	10.0
1912−24−9	Atrazine		45.3	ug/L	3.00	10.0
92−87−5	Benzidine		52.8	ug/L	3.90	10.0
65−85−0	Benzoic acid		25.9	ug/L	6.00	20.0
100−51−6	Benzyl alcohol		27.8	ug/L	3.00	10.0
85−68−7	Butylbenzylphthalate		47.4	ug/L	3.00	10.0
84−74−2	Di−n−butylphthalate		39.9	ug/L	3.00	10.0
117−84−0	Di−n−octylphthalate		39.1	ug/L	3.00	10.0
132−64−9	Dibenzofuran		43.2	ug/L	3.00	10.0
84−66−2	Diethylphthalate		50.6	ug/L	3.00	10.0
131−11−3	Dimethylphthalate		50.7	ug/L	3.00	10.0
88−85−7	Dinoseb	U	10.0	ug/L	3.00	10.0

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048938**				
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1372002**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 14:07**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1207.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine		45.5	ug/L	3.00	10.0
87−68−3	Hexachlorobutadiene		30.3	ug/L	3.00	10.0
77−47−4	Hexachlorocyclopentadiene		28.7	ug/L	3.00	10.0
67−72−1	Hexachloroethane		31.6	ug/L	3.00	10.0
78−59−1	Isophorone		46.2	ug/L	3.50	10.0
62−75−9	N−Methyl−N−nitrosomethylamine		29.1	ug/L	3.00	10.0
924−16−3	N−Nitrosodi−n−butylamine	U	10.0	ug/L	3.00	10.0
55−18−5	N−Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*		42.0	ug/L	3.00	10.0
930−55−2	N−Nitrosopyrrolidine		40.1	ug/L	3.00	10.0
98−95−3	Nitrobenzene		48.1	ug/L	3.00	10.0
608−93−5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108−95−2	Phenol		15.0	ug/L	3.00	10.0
110−86−1	Pyridine		32.4	ug/L	3.00	10.0
111−91−1	bis(2−Chloroethoxy)methane		45.0	ug/L	3.00	10.0
111−44−4	bis(2−Chloroethyl) ether		45.4	ug/L	3.00	10.0
39638−32−9	bis(2−Chloroisopropyl)ether		37.4	ug/L	3.00	10.0
117−81−7	bis(2−Ethylhexyl)phthalate		44.4	ug/L	3.00	10.0
65794−96−9	m,p−Cresols		27.8	ug/L	3.70	10.0
99−09−2	3−Nitroaniline *m−Nitroaniline*		44.0	ug/L	3.00	10.0
95−48−7	o−Cresol		31.9	ug/L	3.00	10.0
88−74−4	2−Nitroaniline *o−Nitroaniline*		46.0	ug/L	3.00	10.0
100−01−6	4−Nitroaniline *p−Nitroaniline*		48.1	ug/L	3.00	10.0

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	87.5	100	ug/L	87.5	(26%−129%)
2−Fluorobiphenyl	39.6	50.0	ug/L	79.2	(32%−102%)
2−Fluorophenol	48.2	100	ug/L	48.2	(10%−78%)
Nitrobenzene−d5	47.4	50.0	ug/L	94.8	(36%−125%)
Phenol−d5	29.4	100	ug/L	29.4	(10%−104%)
p−Terphenyl−d14	47.9	50.0	ug/L	95.8	(34%−135%)

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203048939**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA−14−54782MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 15:42**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**430 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1210.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene		77.6	ug/L	6.98	23.3
120−82−1	1,2,4−Trichlorobenzene		75.2	ug/L	6.98	23.3
95−50−1	1,2−Dichlorobenzene		80.5	ug/L	6.98	23.3
122−66−7	Azobenzene		98.8	ug/L	6.98	23.3
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene		77.4	ug/L	6.98	23.3
106−46−7	1,4−Dichlorobenzene		76.5	ug/L	6.98	23.3
123−91−1	1,4−Dioxane		87.5	ug/L	6.98	23.3
58−90−2	2,3,4,6−Tetrachlorophenol		91.6	ug/L	6.98	23.3
95−95−4	2,4,5−Trichlorophenol		77.6	ug/L	6.98	23.3
88−06−2	2,4,6−Trichlorophenol		101	ug/L	6.98	23.3
120−83−2	2,4−Dichlorophenol		86.4	ug/L	6.98	23.3
105−67−9	2,4−Dimethylphenol		85.1	ug/L	6.98	23.3
51−28−5	2,4−Dinitrophenol		98.5	ug/L	11.6	46.5
121−14−2	2,4−Dinitrotoluene		106	ug/L	6.98	23.3
606−20−2	2,6−Dinitrotoluene		105	ug/L	6.98	23.3
91−58−7	2−Chloronaphthalene		83.4	ug/L	0.953	2.33
95−57−8	2−Chlorophenol		89.7	ug/L	6.98	23.3
534−52−1	2−Methyl−4,6−dinitrophenol		102	ug/L	6.98	23.3
88−75−5	2−Nitrophenol		99.3	ug/L	6.98	23.3
91−94−1	3,3'−Dichlorobenzidine		90.0	ug/L	6.98	23.3
101−55−3	4−Bromophenylphenylether		91.4	ug/L	6.98	23.3
59−50−7	Parachlorometa cresol		100	ug/L	6.98	23.3
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline		94.3	ug/L	7.67	23.3
7005−72−3	4−Chlorophenylphenylether		98.9	ug/L	6.98	23.3
100−02−7	4−Nitrophenol		30.9	ug/L	6.98	23.3
62−53−3	Aniline		107	ug/L	9.77	23.3
1912−24−9	Atrazine		107	ug/L	6.98	23.3
92−87−5	Benzidine		172	ug/L	9.07	23.3
65−85−0	Benzoic acid		86.4	ug/L	14.0	46.5
100−51−6	Benzyl alcohol		73.8	ug/L	6.98	23.3
85−68−7	Butylbenzylphthalate		98.7	ug/L	6.98	23.3
84−74−2	Di−n−butylphthalate		89.3	ug/L	6.98	23.3
117−84−0	Di−n−octylphthalate		92.0	ug/L	6.98	23.3
132−64−9	Dibenzofuran		98.6	ug/L	6.98	23.3
84−66−2	Diethylphthalate		112	ug/L	6.98	23.3
131−11−3	Dimethylphthalate		113	ug/L	6.98	23.3
88−85−7	Dinoseb	U	23.3	ug/L	6.98	23.3

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203048939**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA−14−54782MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 15:42**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**430 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1210.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine		98.7	ug/L	6.98	23.3
87−68−3	Hexachlorobutadiene		67.3	ug/L	6.98	23.3
77−47−4	Hexachlorocyclopentadiene		65.2	ug/L	6.98	23.3
67−72−1	Hexachloroethane		71.7	ug/L	6.98	23.3
78−59−1	Isophorone		102	ug/L	8.14	23.3
62−75−9	N−Methyl−N−nitrosomethylamine		86.7	ug/L	6.98	23.3
924−16−3	N−Nitrosodi−n−butylamine	U	23.3	ug/L	6.98	23.3
55−18−5	N−Nitrosodiethylamine	U	23.3	ug/L	6.98	23.3
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*		99.6	ug/L	6.98	23.3
930−55−2	N−Nitrosopyrrolidine		99.6	ug/L	6.98	23.3
98−95−3	Nitrobenzene		109	ug/L	6.98	23.3
608−93−5	Pentachlorobenzene	U	23.3	ug/L	6.98	23.3
108−95−2	Phenol		51.6	ug/L	6.98	23.3
110−86−1	Pyridine		93.1	ug/L	6.98	23.3
111−91−1	bis(2−Chloroethoxy)methane		103	ug/L	6.98	23.3
111−44−4	bis(2−Chloroethyl) ether		103	ug/L	6.98	23.3
39638−32−9	bis(2−Chloroisopropyl)ether		88.5	ug/L	6.98	23.3
117−81−7	bis(2−Ethylhexyl)phthalate		94.1	ug/L	6.98	23.3
65794−96−9	m,p−Cresols		76.6	ug/L	8.60	23.3
99−09−2	3−Nitroaniline *m−Nitroaniline*		99.3	ug/L	6.98	23.3
95−48−7	o−Cresol		85.5	ug/L	6.98	23.3
88−74−4	2−Nitroaniline *o−Nitroaniline*		101	ug/L	6.98	23.3
100−01−6	4−Nitroaniline *p−Nitroaniline*		112	ug/L	6.98	23.3

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	189	233	ug/L	81.1	(26%−129%)
2−Fluorobiphenyl	93.8	116	ug/L	80.7	(32%−102%)
2−Fluorophenol	139	233	ug/L	59.9	(10%−78%)
Nitrobenzene−d5	104	116	ug/L	89.8	(36%−125%)
Phenol−d5	101	233	ug/L	43.5	(10%−104%)
p−Terphenyl−d14	100	116	ug/L	86.4	(34%−135%)

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203048940**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA−14−54782MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 16:13**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**430 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1211.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95−94−3	1,2,4,5−Tetrachlorobenzene		76.2	ug/L	6.98	23.3
120−82−1	1,2,4−Trichlorobenzene		75.5	ug/L	6.98	23.3
95−50−1	1,2−Dichlorobenzene		78.3	ug/L	6.98	23.3
122−66−7	Azobenzene		96.1	ug/L	6.98	23.3
	1,2−Diphenylhydrazine					
541−73−1	1,3−Dichlorobenzene		76.7	ug/L	6.98	23.3
106−46−7	1,4−Dichlorobenzene		76.9	ug/L	6.98	23.3
123−91−1	1,4−Dioxane		90.0	ug/L	6.98	23.3
58−90−2	2,3,4,6−Tetrachlorophenol		88.8	ug/L	6.98	23.3
95−95−4	2,4,5−Trichlorophenol		78.6	ug/L	6.98	23.3
88−06−2	2,4,6−Trichlorophenol		98.9	ug/L	6.98	23.3
120−83−2	2,4−Dichlorophenol		90.3	ug/L	6.98	23.3
105−67−9	2,4−Dimethylphenol		85.4	ug/L	6.98	23.3
51−28−5	2,4−Dinitrophenol		107	ug/L	11.6	46.5
121−14−2	2,4−Dinitrotoluene		105	ug/L	6.98	23.3
606−20−2	2,6−Dinitrotoluene		101	ug/L	6.98	23.3
91−58−7	2−Chloronaphthalene		81.2	ug/L	0.953	2.33
95−57−8	2−Chlorophenol		85.1	ug/L	6.98	23.3
534−52−1	2−Methyl−4,6−dinitrophenol		105	ug/L	6.98	23.3
88−75−5	2−Nitrophenol		98.4	ug/L	6.98	23.3
91−94−1	3,3'−Dichlorobenzidine		98.9	ug/L	6.98	23.3
101−55−3	4−Bromophenylphenylether		88.8	ug/L	6.98	23.3
59−50−7	Parachlorometa cresol		103	ug/L	6.98	23.3
	4−Chloro−3−methylphenol					
106−47−8	4−Chloroaniline		98.3	ug/L	7.67	23.3
7005−72−3	4−Chlorophenylphenylether		93.9	ug/L	6.98	23.3
100−02−7	4−Nitrophenol		37.3	ug/L	6.98	23.3
62−53−3	Aniline		99.3	ug/L	9.77	23.3
1912−24−9	Atrazine		102	ug/L	6.98	23.3
92−87−5	Benzidine		192	ug/L	9.07	23.3
65−85−0	Benzoic acid		101	ug/L	14.0	46.5
100−51−6	Benzyl alcohol		68.6	ug/L	6.98	23.3
85−68−7	Butylbenzylphthalate		92.7	ug/L	6.98	23.3
84−74−2	Di−n−butylphthalate		89.7	ug/L	6.98	23.3
117−84−0	Di−n−octylphthalate		93.2	ug/L	6.98	23.3
132−64−9	Dibenzofuran		96.7	ug/L	6.98	23.3
84−66−2	Diethylphthalate		107	ug/L	6.98	23.3
131−11−3	Dimethylphthalate		110	ug/L	6.98	23.3
88−85−7	Dinoseb	U	23.3	ug/L	6.98	23.3

Semi−Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2014−2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203048940**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1372002**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA−14−54782MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL−OA−E−009**
Batch ID:	**1372003**	**Inst:**	**MSD7.I**	**Dilution:**	**1**
Run Date:	**03/12/2014 16:13**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:00**	**Aliquot:**	**430 mL**	**Final Volume:**	**1 mL**
Data File:	**s031214.b\s7c1211.D**	**Column:**	**DB−5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122−39−4	Diphenylamine		95.9	ug/L	6.98	23.3
87−68−3	Hexachlorobutadiene		67.7	ug/L	6.98	23.3
77−47−4	Hexachlorocyclopentadiene		67.3	ug/L	6.98	23.3
67−72−1	Hexachloroethane		71.6	ug/L	6.98	23.3
78−59−1	Isophorone		107	ug/L	8.14	23.3
62−75−9	N−Methyl−N−nitrosomethylamine		87.9	ug/L	6.98	23.3
924−16−3	N−Nitrosodi−n−butylamine	U	23.3	ug/L	6.98	23.3
55−18−5	N−Nitrosodiethylamine	U	23.3	ug/L	6.98	23.3
621−64−7	N−Nitrosodi−−n−propylamine *N−Nitrosodipropylamine*		93.1	ug/L	6.98	23.3
930−55−2	N−Nitrosopyrrolidine		95.9	ug/L	6.98	23.3
98−95−3	Nitrobenzene		108	ug/L	6.98	23.3
608−93−5	Pentachlorobenzene	U	23.3	ug/L	6.98	23.3
108−95−2	Phenol		47.5	ug/L	6.98	23.3
110−86−1	Pyridine		94.2	ug/L	6.98	23.3
111−91−1	bis(2−Chloroethoxy)methane		102	ug/L	6.98	23.3
111−44−4	bis(2−Chloroethyl) ether		95.9	ug/L	6.98	23.3
39638−32−9	bis(2−Chloroisopropyl)ether		80.7	ug/L	6.98	23.3
117−81−7	bis(2−Ethylhexyl)phthalate		90.3	ug/L	6.98	23.3
65794−96−9	m,p−Cresols		72.8	ug/L	8.60	23.3
99−09−2	3−Nitroaniline *m−Nitroaniline*		102	ug/L	6.98	23.3
95−48−7	o−Cresol		80.3	ug/L	6.98	23.3
88−74−4	2−Nitroaniline *o−Nitroaniline*		103	ug/L	6.98	23.3
100−01−6	4−Nitroaniline *p−Nitroaniline*		117	ug/L	6.98	23.3

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6−Tribromophenol	188	233	ug/L	80.7	(26%−129%)
2−Fluorobiphenyl	93.7	116	ug/L	80.6	(32%−102%)
2−Fluorophenol	140	233	ug/L	60.1	(10%−78%)
Nitrobenzene−d5	105	116	ug/L	90.1	(36%−125%)
Phenol−d5	95.1	233	ug/L	40.9	(10%−104%)
p−Terphenyl−d14	92.5	116	ug/L	79.6	(34%−135%)

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Polynuclear Aromatic Hydrocarbons**
Analytical Method:	SW846 8310
Prep Method:	SW846 3510C
Analytical Batch Number:	1372230
Prep Batch Number:	1372229

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8310:

Sample ID	Client ID
344332002	CAWA-14-54782
344332011	CAWA-14-54783
1203049582	Method Blank (MB)
1203049583	Laboratory Control Sample (LCS)
1203049584	344383002(CAWA-14-54747) Matrix Spike (MS)
1203049586	Laboratory Control Sample Duplicate (LCSD)

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-030 REV# 15.

Raw data reports are processed and reviewed by the analyst using the Target software package. False positives have been removed from the Target quantitation reports per standard operating procedures (SOP) section 18.0.

Calibration Information

Due to software limitations, the files displayed at the beginning of the Form 6 are only the last files uploaded for each individual level. A complete listing of all files used in the current ICAL are shown on the Calibration History that is included with each Level 4 or higher package. The last file by date in each level is the one currently uploaded for that level.

The linear equation used in Target and indicated on the initial calibration summary form is not a conventional linear equation (slope intercept formula) and does not match the equation found in SW-846 method 8000B. The x and y axes are inversed in Target, so that the instrument response is treated as the independent variable (x) and the concentration ratio is treated as the dependent variable (y). The equation used in Target to calculate sample results is adjusted to account for the linear equation inversion and reciprocal slope. The adjusted calculation has been independently verified to produce valid results.

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

CCV Requirements
All associated calibration verification standards (ICV or CCV) met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All the surrogate recoveries were within the established acceptance criteria for this SDG.

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

Laboratory Control Sample Duplicate (LCSD) Recovery
Biased low recoveries for three target analytes were observed in the LCSD (1203049586). The recovery for Naphthalene was 30% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, and the recovery for 1-Methylnaphthalene was 44% and the acceptance range is 55-96%. The biased low recoveries observed in the LCSD may be the result of vagaries in the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.

LCS/LCSD Relative Percent Difference (RPD) Statement
Non-conforming RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203049583/1203049486). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges. The non-conforming RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.

QC Sample Designation
Client sample 344383002 (CAWA-14-54747) from SDG 2014-2971 was chosen for matrix spike analysis.

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

Matrix Spike Duplicate (MSD) Recovery Statement
There was only enough sample provided for one matrix spike.

MS/MSD Relative Percent Difference (RPD) Statement
There was only enough sample provided for one matrix spike.

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

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

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

Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information:

Data Exception (DER) Documentation
Data Exception Report 1277575 was generated for this SDG.

Biased low recoveries for three target analytes were observed in the LCSD (1203049586). The recovery for Naphthalene was 30% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, and the recovery for 1-Methylnaphthalene was 44% and the acceptance range is 55-96%. The biased low recoveries observed in the LCSD may be the result of vagaries in the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.

Non-conforming RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203049583/1203049486). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges. The non-conforming RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.

Manual Integrations
Some initial calibration standards, continuing calibration standards, and/or samples may have required manual integrations due to software limitations.

Please see the raw data in the Miscellaneous Section.

Additional Comments
The Form 8 is used only as a sequence of the analysis.

Electronic Package Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the analyst, reviewer, and report specialist names associated with the generation of the data and package. The data validator will always sign and date the case narrative.

Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

System Configuration

The laboratory utilizes a high performance liquid chromatography (HPLC) instrument configuration for Polynuclear Aromatic Hydrocarbons analyses.

The chromatographic hardware system consists of a HP Model 1100 HPLC with programmable gradient pumping and a 100uL loop injector.

The HPLC 1100 is coupled to a HP Model G1315A Diode Array UV detector which monitors absorbance at the following five wavelengths: 1) 224 nm; 2) 250 nm; 3) 270 nm; 4) 234 nm; 5) 300 nm.

The HPLC 1100 is also coupled to a HP Model G1321A Fluorescence Detector in series which monitors the following varying excitations and emissions 1) EX 230 nm EM 330 nm; 2) EX 210 nm EM 314 nm; 3) EX 250 nm EM 368 nm; 4) EX 237 nm EM 440 nm; 5) EX 277 nm EM 376 nm; 6) EX 255 nm EM 420 nm; 7) EX 230 nm EM 453 nm.

The Diode Array UV detector is used as the primary detector and the Fluorescence Detector is used as the confirmation detector. All results are reported from the primary Diode Array UV detector.

The HPLC system is identified with a designation of HPLC E in the raw data printouts.

Chromatographic Columns

Chromatographic separation of Polynuclear Aromatic Hydrocarbons is accomplished through analysis on the following reversed phase column:

Phenomenex: Luna C18 (2), 100 A, 250 mm x 4.6 mm containing 5 um size particle.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

The Qualifiers in this report are defined as follows:

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

** Analyte is a surrogate compound

U Analyte was analyzed for, but not detected above the MDL, MDA, 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: 31 MAR 2014 **Title: Group Leader**

Roadmap for ARSL 2014-2960 HPLC_PAH

This roadmap was analyzed by cww on 03-26-2014, 14:42.
This roadmap was reviewed by MAP on 03-27-2014, 09:01.
This roadmap was packaged by map on 03-31-2014, 12:38.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
☐	N	/chem/hplce.i/p031714.b/ph5c1727.d	344332002	18-MAR-2014	04:07	2014-2960.sub	CAWA-14-54782	1	1372230	
☐	N	/chem/hplce.i/p031714.b/ph5c1728.d	344332011	18-MAR-2014	04:49	2014-2960.sub	CAWA-14-54783	1	1372230	

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
☐	N	/chem/hplce.i/p031714.b/ph5c1715C.d	1203049582	mb	17-MAR-2014	19:40	2014-2960.sub	PAHBLK01	1	1372230	
☐	N	/chem/hplce.i/p031714.b/ph5c1716C.d	1203049583	lcs	17-MAR-2014	20:23	2014-2960.sub	PAHBLK01LCS	1	1372230	Pass
☐	N	/chem/hplce.i/p031714.b/ph5c1717C.d	1203049586	lcsd	17-MAR-2014	21:05	2014-2960.sub	PAHBLK01LCSD	1	1372230	3 low spike recoveries. Permission given to report data.

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332002**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/18/2014 04:07**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**950 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1727.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.526	ug/L	0.229	0.526
91-57-6	2-Methylnaphthalene	U	0.526	ug/L	0.158	0.526
83-32-9	Acenaphthene	U	0.526	ug/L	0.158	0.526
208-96-8	Acenaphthylene	U	0.526	ug/L	0.158	0.526
120-12-7	Anthracene	U	0.526	ug/L	0.158	0.526
56-55-3	Benzo(a)anthracene	U	0.0526	ug/L	0.0168	0.0526
50-32-8	Benzo(a)pyrene	U	0.0526	ug/L	0.0168	0.0526
205-99-2	Benzo(b)fluoranthene	U	0.0526	ug/L	0.0168	0.0526
191-24-2	Benzo(ghi)perylene	U	0.0526	ug/L	0.0168	0.0526
207-08-9	Benzo(k)fluoranthene	U	0.0263	ug/L	0.00842	0.0263
218-01-9	Chrysene	U	0.0526	ug/L	0.0168	0.0526
53-70-3	Dibenzo(a,h)anthracene	U	0.0526	ug/L	0.0168	0.0526
206-44-0	Fluoranthene	U	0.0526	ug/L	0.0168	0.0526
86-73-7	Fluorene	U	0.526	ug/L	0.158	0.526
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.0526	ug/L	0.0168	0.0526
91-20-3	Naphthalene	U	0.526	ug/L	0.158	0.526
85-01-8	Phenanthrene	U	0.526	ug/L	0.192	0.526
129-00-0	Pyrene	U	0.0526	ug/L	0.0168	0.0526

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	133	263	ug/L	50.5	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332011**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/18/2014 04:49**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**940 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1728.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.532	ug/L	0.232	0.532
91-57-6	2-Methylnaphthalene	U	0.532	ug/L	0.160	0.532
83-32-9	Acenaphthene	U	0.532	ug/L	0.160	0.532
208-96-8	Acenaphthylene	U	0.532	ug/L	0.160	0.532
120-12-7	Anthracene	U	0.532	ug/L	0.160	0.532
56-55-3	Benzo(a)anthracene	U	0.0532	ug/L	0.017	0.0532
50-32-8	Benzo(a)pyrene	U	0.0532	ug/L	0.017	0.0532
205-99-2	Benzo(b)fluoranthene	U	0.0532	ug/L	0.017	0.0532
191-24-2	Benzo(ghi)perylene	U	0.0532	ug/L	0.017	0.0532
207-08-9	Benzo(k)fluoranthene	U	0.0266	ug/L	0.00851	0.0266
218-01-9	Chrysene	U	0.0532	ug/L	0.017	0.0532
53-70-3	Dibenzo(a,h)anthracene	U	0.0532	ug/L	0.017	0.0532
206-44-0	Fluoranthene	U	0.0532	ug/L	0.017	0.0532
86-73-7	Fluorene	U	0.532	ug/L	0.160	0.532
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.0532	ug/L	0.017	0.0532
91-20-3	Naphthalene	U	0.532	ug/L	0.160	0.532
85-01-8	Phenanthrene	U	0.532	ug/L	0.194	0.532
129-00-0	Pyrene	U	0.0532	ug/L	0.017	0.0532

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	159	266	ug/L	59.7	(21%-96%)

QC Summary

PAH by HPLC

Surrogate Recovery Report

SDG Number: 2014-2960

Matrix Type: LIQUID

PACK Column (1) : C-18, DAD/FLD

Sample ID	Client ID	DFBF %REC
1203049582	MB for batch 1372229	31
1203049583	LCS for batch 1372229	48
1203049586	LCSD for batch 1372229	29
344332002	CAWA-14-54782	50
344332011	CAWA-14-54783	60
1203049584	CAWA-14-54747MS	60

Surrogate	Acceptance Limits
DFBF = Decafluorobiphenyl	(21%-96%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

PAH by HPLC

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1372229**
Lab Sample ID **1203049583**
Instrument: **HPLCE.I**
Analyst: **CWW**
Inj. Vol: **20 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/17/2014 20:23**
Prep Batch ID: **1372229**
Batch ID: **1372230**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	LCS	Naphthalene	50.0	0.0	28.4	57	54-108
91-57-6	LCS	2-Methylnaphthalene	50.0	0.0	32.8	66	50-91
90-12-0	LCS	1-Methylnaphthalene	50.0	0.0	30.3	61	55-96
208-96-8	LCS	Acenaphthylene	50.0	0.0	33.8	68	52-100
83-32-9	LCS	Acenaphthene	50.0	0.0	35.6	71	53-107
86-73-7	LCS	Fluorene	50.0	0.0	40.0	80	62-130
85-01-8	LCS	Phenanthrene	50.0	0.0	42.5	85	69-130
120-12-7	LCS	Anthracene	50.0	0.0	46.1	92	70-130
206-44-0	LCS	Fluoranthene	5.00	0.0	4.24	85	70-130
129-00-0	LCS	Pyrene	5.00	0.0	4.44	89	70-130
56-55-3	LCS	Benzo(a)anthracene	5.00	0.0	4.49	90	70-130
218-01-9	LCS	Chrysene	5.00	0.0	4.75	95	70-130
205-99-2	LCS	Benzo(b)fluoranthene	5.00	0.0	4.39	88	70-130
207-08-9	LCS	Benzo(k)fluoranthene	2.50	0.0	2.28	91	70-130
50-32-8	LCS	Benzo(a)pyrene	5.00	0.0	4.43	89	70-130
193-39-5	LCS	Indeno(1,2,3-cd)pyrene	5.00	0.0	4.10	82	57-114
53-70-3	LCS	Dibenzo(a,h)anthracene	5.00	0.0	2.38	48	30-118
191-24-2	LCS	Benzo(ghi)perylene	5.00	0.0	2.68	54	42-115

PAH by HPLC

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCSD for batch 1372229**
Lab Sample ID **1203049586**
Instrument: **HPLCE.I**
Analyst: **CWW**
Inj. Vol: **20 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **03/17/2014 21:05**
Prep Batch ID: **1372229**
Batch ID: **1372230**
Dilution: 1

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
91-20-3	LCSD Naphthalene	50.0	0.0	20.9	42 *	54-108	31 *	0-26
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	24.9	50	50-91	27 *	0-20
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	22.2	44 *	55-96	31 *	0-20
208-96-8	LCSD Acenaphthylene	50.0	0.0	26.2	52	52-100	25 *	0-20
83-32-9	LCSD Acenaphthene	50.0	0.0	28.3	57	53-107	23 *	0-20
86-73-7	LCSD Fluorene	50.0	0.0	38.3	77	62-130	4	0-20
85-01-8	LCSD Phenanthrene	50.0	0.0	42.0	84	69-130	1	0-20
120-12-7	LCSD Anthracene	50.0	0.0	45.6	91	70-130	1	0-20
206-44-0	LCSD Fluoranthene	5.00	0.0	4.17	83	70-130	2	0-20
129-00-0	LCSD Pyrene	5.00	0.0	4.39	88	70-130	1	0-20
56-55-3	LCSD Benzo(a)anthracene	5.00	0.0	4.44	89	70-130	1	0-20
218-01-9	LCSD Chrysene	5.00	0.0	4.71	94	70-130	1	0-20
205-99-2	LCSD Benzo(b)fluoranthene	5.00	0.0	4.32	86	70-130	2	0-20
207-08-9	LCSD Benzo(k)fluoranthene	2.50	0.0	2.23	89	70-130	2	0-20
50-32-8	LCSD Benzo(a)pyrene	5.00	0.0	4.36	87	70-130	2	0-20
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	5.00	0.0	3.77	75	57-114	9	0-20
53-70-3	LCSD Dibenzo(a,h)anthracene	5.00	0.0	2.16	43	30-118	10	0-20
191-24-2	LCSD Benzo(ghi)perylene	5.00	0.0	2.61	52	42-115	3	0-20

PAH by HPLC

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54747MS**
Lab Sample ID **1203049584**
Instrument: **HPLCE.I**
Analyst: **CWW**
Inj. Vol: **20 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/18/2014 06:13**
Prep Batch ID: **1372229**
Batch ID: **1372230**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	MS	Naphthalene	50.5	0.00	U	34.6	68	32-104
91-57-6	MS	2-Methylnaphthalene	50.5	0.00	U	39.7	79	56-130
90-12-0	MS	1-Methylnaphthalene	50.5	0.00	U	37.1	73	46-130
208-96-8	MS	Acenaphthylene	50.5	0.00	U	38.7	77	26-121
83-32-9	MS	Acenaphthene	50.5	0.00	U	41.5	82	27-118
86-73-7	MS	Fluorene	50.5	0.00	U	41.7	83	29-123
85-01-8	MS	Phenanthrene	50.5	0.00	U	42.5	84	35-126
120-12-7	MS	Anthracene	50.5	0.00	U	44.7	88	36-122
206-44-0	MS	Fluoranthene	5.05	0.00	U	4.12	82	32-134
129-00-0	MS	Pyrene	5.05	0.00	U	4.34	86	32-134
56-55-3	MS	Benzo(a)anthracene	5.05	0.00	U	4.33	86	35-129
218-01-9	MS	Chrysene	5.05	0.00	U	4.61	91	25-141
205-99-2	MS	Benzo(b)fluoranthene	5.05	0.00	U	4.16	82	29-133
207-08-9	MS	Benzo(k)fluoranthene	2.53	0.00	U	2.23	88	28-134
50-32-8	MS	Benzo(a)pyrene	5.05	0.00	U	4.32	86	25-135
193-39-5	MS	Indeno(1,2,3-cd)pyrene	5.05	0.00	U	4.05	80	25-135
53-70-3	MS	Dibenzo(a,h)anthracene	5.05	0.00	U	4.18	83	25-133
191-24-2	MS	Benzo(ghi)perylene	5.05	0.00	U	3.61	71	27-140

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1372229**	**Instrument ID:**	**HPLCE.I**	**Data File:**	**ph5c1715.d**
Lab Sample ID:	**1203049582**	**Prep Date:**	**03/13/2014 12:00**	**Analyzed:**	**03/17/14 19:40**
Column:	**C-18, DAD/FLD**	**Level:**	**LOW**		

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 1372229	1203049583	ph5c1716.d	03/17/14	2023
02	LCSD for batch 1372229	1203049586	ph5c1717.d	03/17/14	2105
03	CAWA-14-54782	344332002	ph5c1727.d	03/18/14	0407
04	CAWA-14-54783	344332011	ph5c1728.d	03/18/14	0449
05	CAWA-14-54747MS	1203049584	ph5c1730.d	03/18/14	0613

QC Data

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049582**				
Client Sample:	**QC for batch 1372229**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1372229**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/17/2014 19:40**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1715.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.500	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
83-32-9	Acenaphthene	U	0.500	ug/L	0.150	0.500
208-96-8	Acenaphthylene	U	0.500	ug/L	0.150	0.500
120-12-7	Anthracene	U	0.500	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene	U	0.050	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene	U	0.050	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene	U	0.050	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene	U	0.050	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	U	0.025	ug/L	0.008	0.025
218-01-9	Chrysene	U	0.050	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene	U	0.050	ug/L	0.016	0.050
206-44-0	Fluoranthene	U	0.050	ug/L	0.016	0.050
86-73-7	Fluorene	U	0.500	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.050	ug/L	0.016	0.050
91-20-3	Naphthalene	U	0.500	ug/L	0.150	0.500
85-01-8	Phenanthrene	U	0.500	ug/L	0.182	0.500
129-00-0	Pyrene	U	0.050	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	77.4	250	ug/L	31.0	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049583**				
Client Sample:	**QC for batch 1372229**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1372229**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/17/2014 20:23**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1716.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		30.3	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		32.8	ug/L	0.150	0.500
83-32-9	Acenaphthene		35.6	ug/L	0.150	0.500
208-96-8	Acenaphthylene		33.8	ug/L	0.150	0.500
120-12-7	Anthracene		46.1	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.49	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.43	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.39	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.68	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.28	ug/L	0.008	0.025
218-01-9	Chrysene		4.75	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.38	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.24	ug/L	0.016	0.050
86-73-7	Fluorene		40.0	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		4.10	ug/L	0.016	0.050
91-20-3	Naphthalene		28.4	ug/L	0.150	0.500
85-01-8	Phenanthrene		42.5	ug/L	0.182	0.500
129-00-0	Pyrene		4.44	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	119	250	ug/L	47.6	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049586**				
Client Sample:	**QC for batch 1372229**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1372229**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/17/2014 21:05**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1717.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		22.2	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		24.9	ug/L	0.150	0.500
83-32-9	Acenaphthene		28.3	ug/L	0.150	0.500
208-96-8	Acenaphthylene		26.2	ug/L	0.150	0.500
120-12-7	Anthracene		45.6	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.44	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.36	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.32	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.61	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.23	ug/L	0.008	0.025
218-01-9	Chrysene		4.71	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.16	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.17	ug/L	0.016	0.050
86-73-7	Fluorene		38.3	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.77	ug/L	0.016	0.050
91-20-3	Naphthalene		20.9	ug/L	0.150	0.500
85-01-8	Phenanthrene		42.0	ug/L	0.182	0.500
129-00-0	Pyrene		4.39	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	71.9	250	ug/L	28.8	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/10/2014 12:13**	**Matrix:**	**W**
Lab Sample ID:	**1203049584**	**Date Received:**	**03/12/2014 09:00**		
Client Sample:	**QC for batch 1372229**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54747MS**	**Method:**	**SW846 8310**	**SOP Ref:**	**GL-OA-E-030**
Batch ID:	**1372230**	**Inst:**	**HPLCE.I**	**Dilution:**	**1**
Run Date:	**03/18/2014 06:13**	**Analyst:**	**CWW**	**Inj. Vol:**	**20 uL**
Prep Date:	**03/13/2014 12:00**	**Aliquot:**	**990 mL**	**Final Volume:**	**1 mL**
Data File:	**ph5c1730.d**	**Column:**	**C-18, DAD/FLD**	**Level:**	**LOW**

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		37.1	ug/L	0.220	0.505
91-57-6	2-Methylnaphthalene		39.7	ug/L	0.152	0.505
83-32-9	Acenaphthene		41.5	ug/L	0.152	0.505
208-96-8	Acenaphthylene		38.7	ug/L	0.152	0.505
120-12-7	Anthracene		44.7	ug/L	0.152	0.505
56-55-3	Benzo(a)anthracene		4.33	ug/L	0.0162	0.0505
50-32-8	Benzo(a)pyrene		4.32	ug/L	0.0162	0.0505
205-99-2	Benzo(b)fluoranthene		4.16	ug/L	0.0162	0.0505
191-24-2	Benzo(ghi)perylene		3.61	ug/L	0.0162	0.0505
207-08-9	Benzo(k)fluoranthene		2.23	ug/L	0.00808	0.0253
218-01-9	Chrysene		4.61	ug/L	0.0162	0.0505
53-70-3	Dibenzo(a,h)anthracene		4.18	ug/L	0.0162	0.0505
206-44-0	Fluoranthene		4.12	ug/L	0.0162	0.0505
86-73-7	Fluorene		41.7	ug/L	0.152	0.505
193-39-5	Indeno(1,2,3-cd)pyrene		4.05	ug/L	0.0162	0.0505
91-20-3	Naphthalene		34.6	ug/L	0.152	0.505
85-01-8	Phenanthrene		42.5	ug/L	0.184	0.505
129-00-0	Pyrene		4.34	ug/L	0.0162	0.0505

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Decafluorobiphenyl	151	253	ug/L	59.8	(21%-96%)

Miscellaneous Data

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
25-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
HPLC	SW846 8310	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1372230	See Below		

Potentially affected work order(s)(SDG): **344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344383(2014-2971),344384(2014-2970)**

Application Issues:

Failed RPD for MS/MSD, or PS/PSD

Failed Recovery for LCS/LCSD

Specification and Requirements Exception Description:	DER Disposition:
1. Biased low recoveries for three target analytes were observed in the LCSD (1203049586). The recovery for Naphthalene was 30% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, and the recovery for 1-Methylnaphthalene was 44% and the acceptance range is 55-96%.	1. The biased low recoveries observed in the LCSD may be the result of vagaries in the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.
2. Non-conforming RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203049583/1203049486). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges.	2. The non-conforming RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.

Originator's Name:

Charles Wilson 26-MAR-14

Data Validator/Group Leader:

Michael Penny 27-MAR-14

Perchlorates by LCMSMS Analysis

Case Narrative

Perchlorate by LC-MS/MS
ARS International, LLC (ARSL)
SDG 2014-2960

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:	1372838
Prep Batch Number:	1372837

Sample Analysis

Sample ID	Client ID
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203051050	Interference Check Sample (ICS)
1203051046	Method Blank (MB)
1203051047	Laboratory Control Sample (LCS)
1203051048	344296007(CAWA-14-54762) Matrix Spike (MS)
1203051049	344296007(CAWA-14-54762) 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# 11.

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 spike recoveries met the acceptance criteria.

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

QC Sample Designation
Client sample 344296007 (CAWA-14-54762) from SDG 2014-2959 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
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

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

A data exception report (DER) was not generated for this SDG.

Manual Integrations
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

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

Client SDG: 2014-2960 GEL Work Order: 344332

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: 25 MAR 2014 **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: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAWA-14-54784

Date Received: 11-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 344332007

Date Filtered: 18-MAR-14

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	0.203	ug/L		1	18-MAR-14 18:36	per0318025a
	Perchlorate Isotope Ratio			2.92			1	18-MAR-14 18:36	per0318025a
14797-73-0	Perchlorate-101	.05	.2	0.208	ug/L		1	18-MAR-14 18:36	per0318025a
	Perchlorate-O(18)			0.500	ug/L		1	18-MAR-14 18:36	per0318025a

^ 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: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAWA-14-54785

Date Received: 11-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 344332016

Date Filtered: 18-MAR-14

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	0.117	ug/L	J	1	18-MAR-14 18:44	per0318026a
	Perchlorate Isotope Ratio			3.09			1	18-MAR-14 18:44	per0318026a
14797-73-0	Perchlorate-101	.05	.2	0.113	ug/L	J	1	18-MAR-14 18:44	per0318026a
	Perchlorate-O(18)			0.475	ug/L		1	18-MAR-14 18:44	per0318026a

^ 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): 2014-2960

Extract Batch Code: 1372837

Date Filtered: 18-MAR-14

Matrix: WATER

Sample ID: 1203051047

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	95.2		85 - 115
Perchlorate Isotope Ratio		2.88				-
Perchlorate-101	0.200	.198	ug/L	98.8		85 - 115
Perchlorate-O(18)		.484	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): 2014-2960

Extract Batch Code: 1372837

Date Extracted: 18-MAR-14

GEL MS/PS ID: 1203051048

Client ID: CAWA-14-54762

GEL MSD/PSD ID: 1203051049

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	0.128	ug/L	0.309	90.3	.312	92	1.09	30	75 - 125
Perchlorate Isotope Ratio	0	3.08		2.95		2.98		.869		-
Perchlorate-101	0.200	0.124	ug/L	0.313	94.3	.313	94.6	.224	30	75 - 125
Perchlorate-O(18)	0	0.496	ug/L	0.500		.504		.794		-

^ 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: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
MB

Date Received: 18-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 1203051046

Date Filtered: 18-MAR-14

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	18-MAR-14 16:53	per0318012a
	Perchlorate Isotope Ratio						1	18-MAR-14 16:53	per0318012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	18-MAR-14 16:53	per0318012a
	Perchlorate-O(18)			0.511	ug/L		1	18-MAR-14 16:53	per0318012a

^ 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: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
LCS

Date Received: 18-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 1203051047

Date Filtered: 18-MAR-14

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	0.190	ug/L	J	1	18-MAR-14 17:01	per0318013a
	Perchlorate Isotope Ratio			2.88			1	18-MAR-14 17:01	per0318013a
14797-73-0	Perchlorate-101	.05	.2	0.198	ug/L	J	1	18-MAR-14 17:01	per0318013a
	Perchlorate-O(18)			0.484	ug/L		1	18-MAR-14 17:01	per0318013a

^ 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: 1372837

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): 2014-2960

GEL Sample ID: 1203051050

Date Filtered: 18-MAR-14

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	0.193	ug/L	J	1	18-MAR-14 17:09	per0318014a
	Perchlorate Isotope Ratio			2.9			1	18-MAR-14 17:09	per0318014a
14797-73-0	Perchlorate-101	.05	.2	0.199	ug/L	J	1	18-MAR-14 17:09	per0318014a
	Perchlorate-O(18)			0.509	ug/L		1	18-MAR-14 17:09	per0318014a

^ 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: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAWA-14-54762MS

Date Received: 11-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 1203051048

Date Filtered: 18-MAR-14

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	0.309	ug/L		1	18-MAR-14 17:48	per0318019a
	Perchlorate Isotope Ratio			2.95			1	18-MAR-14 17:48	per0318019a
14797-73-0	Perchlorate-101	.05	.2	0.313	ug/L		1	18-MAR-14 17:48	per0318019a
	Perchlorate-O(18)			0.500	ug/L		1	18-MAR-14 17:48	per0318019a

^ 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: 1372837

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAWA-14-54762MSD

Date Received: 11-MAR-14

GEL Job No (SDG): 2014-2960

GEL Sample ID: 1203051049

Date Filtered: 18-MAR-14

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	0.312	ug/L		1	18-MAR-14 17:56	per0318020a
	Perchlorate Isotope Ratio			2.98			1	18-MAR-14 17:56	per0318020a
14797-73-0	Perchlorate-101	.05	.2	0.313	ug/L		1	18-MAR-14 17:56	per0318020a
	Perchlorate-O(18)			0.504	ug/L		1	18-MAR-14 17:56	per0318020a

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

*Concentration =

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

Explosives by LCMSMS Analysis

Case Narrative

LC-MS/MS Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Definitive Low Level Analysis of Nitroaromatic Explosives Utilizing Liquid Chromatography-Mass Spectrometry/Mass Spectrometry (LC-MS/MS) by SW-846 Method 8321 Modified (8321M)**
Analytical Method:	SW846 3535/8321A Modified
Prep Method:	SW846 Method 3535
Analytical Batch Number:	1372044
Prep Batch Number:	1372042

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3535/8321A Modified:

Sample ID	Client ID
344332003	CAWA-14-54782
344332012	CAWA-14-54783
1203049042	Method Blank (MB)
1203049043	344332012(CAWA-14-54783) Matrix Spike (MS)
1203049044	344332012(CAWA-14-54783) Matrix Spike Duplicate (MSD)
1203049045	Laboratory Control Sample (LCS)

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-056 REV# 17.

Primary Analyte Analysis

Calibration Information

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

Calibration Verification Standard Requirements
All calibration verification standards for the Primary analyte analysis have not met acceptance criteria of 80-120%. Calibration verification standard EXP0319039 recovered Nitrobenzene at 74.7%. Calibration verification standard EXP0319049 recovered Nitrobenzene at 79.6% and 4-Nitrotoluene at 79.6%. The data were Q qualified and were reported as stated in the SOP.

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

Calibration Blank Requirements
All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

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

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG for this analysis met the acceptance criteria.

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

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation
Client sample 344332012 (CAWA-14-54783) was chosen for matrix spike and matrix spike duplicate analysis.

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

Matrix Spike Duplicate (MSD) Recovery Statement
The MSD spike recoveries were within the established acceptance limits for this analysis.

MS/MSD Relative Percent Difference (RPD) Statement
The RPDs between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance
A final internal standard concentration of 100ug/L is employed in order to meet the minimum response factor requirement of 0.01 per EPA Method 8000C for the analysis of explosives on the API 4000.

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

Technical Information

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

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

Sample Dilutions
In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water.

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

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

Secondary Analyte Analysis

Calibration Information

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

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

Calibration Blank Requirements
All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria.

Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

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

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG for this analysis met the acceptance criteria.

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

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation
Client sample 344332012 (CAWA-14-54783) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement
The MS (1203049043) did not meet acceptance criteria for the recovery of TATB at 128%. The limits are 39-112%. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER.

Matrix Spike Duplicate (MSD) Recovery Statement
The MSD (1203049044) did not meet acceptance criteria for the recovery of TATB at 129%. The limits are 39-112%. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER.

MS/MSD Relative Percent Difference (RPD) Statement
The RPDs between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance
The internal standard was not added to the Secondary analyte extracts.

Technical Information

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

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

Sample Dilutions
In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water.

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

Sample Re-extraction/Re-analysis
QC samples 1203049042 (MB), 1203049043 (CAWA-14-54783MS) and 1203049044 (CAWA-14-54783MSD) were re-analyzed for biased high surrogate recoveries in the initial analysis. The re-analysis data are reported.

Miscellaneous Information

Data Exception (DER) Documentation
Data Exception Report 1278095 was generated for this SDG.

The MS (1203049043) did not meet acceptance criteria for the recovery of TATB at 128%. The limits are 39-112%. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER.

The MSD (1203049044) did not meet acceptance criteria for the recovery of TATB at 129%. The limits are 39-112%. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER.

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

Additional Comments
Due to software limitations, all initial calibration blanks must be designated as XIB001 in order for the forms to be correct.

Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Primary analyte analysis. It is coupled with 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 APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for the Primary analyte analysis.

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

Electronic Packaging Comment

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

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

Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Chromatographic Columns

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

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

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

YMC: J'sphere ODS-H80, 150 x 4.6mm I.D.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

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

Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

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: 31 MAR 2014 **Title: Group Leader**

Sample Data Summary

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54782

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332003

Sample Amount 940 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319039.wiff

Date Analyzed: 20-MAR-14 09:31

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.266	U	0.0851	0.266
118-96-7	*2,4,6-Trinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	0.266	U	0.0851	0.266
121-14-2	*2,4-Dinitrotoluene*				
121-82-4	RDX	0.266	U	0.0851	0.266
121-82-4	*RDX*				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.266	U	0.0851	0.266
19406-51-0	*4-Amino-2,6-dinitrotoluene*				
2691-41-0	HMX	0.266	U	0.0851	0.266
2691-41-0	*HMX*				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.266	U	0.0851	0.266
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
606-20-2	2,6-Dinitrotoluene	0.266	U	0.0851	0.266
606-20-2	*2,6-Dinitrotoluene*				
88-72-2	o-Nitrotoluene	0.266	U	0.0872	0.266
88-72-2	*o-Nitrotoluene*				
98-95-3	Nitrobenzene	0.266	QU	0.0851	0.266
98-95-3	*Nitrobenzene*				
99-08-1	m-Nitrotoluene	0.266	U	0.0851	0.266
99-08-1	*m-Nitrotoluene*				
99-35-4	1,3,5-Trinitrobenzene	0.266	U	0.0851	0.266
99-35-4	*1,3,5-Trinitrobenzene*				
99-65-0	m-Dinitrobenzene	0.266	U	0.0851	0.266
99-65-0	*m-Dinitrobenzene*				
479-45-8	Tetryl	0.532	U	0.0851	0.532
479-45-8	*Tetryl*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54782

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332003

Sample Amount 940 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	0.532	U	0.106	0.532
78-11-5	*PETN*				
99-99-0	p-Nitrotoluene	0.532	QU	0.160	0.532
99-99-0	*p-Nitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54782

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332003

Sample Amount 940 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03240035.wiff

Date Analyzed: 25-MAR-14 01:53

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.06	U	0.319	1.06
3058-38-6	*TATB*				
618-87-1	3,5-Dinitroaniline	1.06	U	0.319	1.06
618-87-1	*3,5-Dinitroaniline*				
78-30-8	tris(o-cresyl) phosphate	1.06	U	0.319	1.06
78-30-8	*tris(o-cresyl) phosphate*				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.66	U	0.532	2.66
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.66	U	0.532	2.66
6629-29-4	*2,4-Diamino-6-nitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332012

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0319040.wiff

Date Analyzed: 20-MAR-14 10:06

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.263	U	0.0842	0.263
118-96-7	*2,4,6-Trinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	0.263	U	0.0842	0.263
121-14-2	*2,4-Dinitrotoluene*				
121-82-4	RDX	0.263	U	0.0842	0.263
121-82-4	*RDX*				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.263	U	0.0842	0.263
19406-51-0	*4-Amino-2,6-dinitrotoluene*				
2691-41-0	HMX	0.263	U	0.0842	0.263
2691-41-0	*HMX*				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.263	U	0.0842	0.263
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
606-20-2	2,6-Dinitrotoluene	0.263	U	0.0842	0.263
606-20-2	*2,6-Dinitrotoluene*				
88-72-2	o-Nitrotoluene	0.263	U	0.0863	0.263
88-72-2	*o-Nitrotoluene*				
98-95-3	Nitrobenzene	0.263	QU	0.0842	0.263
98-95-3	*Nitrobenzene*				
99-08-1	m-Nitrotoluene	0.263	U	0.0842	0.263
99-08-1	*m-Nitrotoluene*				
99-35-4	1,3,5-Trinitrobenzene	0.263	U	0.0842	0.263
99-35-4	*1,3,5-Trinitrobenzene*				
99-65-0	m-Dinitrobenzene	0.263	U	0.0842	0.263
99-65-0	*m-Dinitrobenzene*				
479-45-8	Tetryl	0.526	U	0.0842	0.526
479-45-8	*Tetryl*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332012

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	0.526	U	0.105	0.526
78-11-5	*PETN*				
99-99-0	p-Nitrotoluene	0.526	QU	0.158	0.526
99-99-0	*p-Nitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 344332012

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03240036.wiff

Date Analyzed: 25-MAR-14 02:10

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.05	U	0.316	1.05
3058-38-6	*TATB*				
618-87-1	3,5-Dinitroaniline	1.05	U	0.316	1.05
618-87-1	*3,5-Dinitroaniline*				
78-30-8	tris(o-cresyl) phosphate	1.05	U	0.316	1.05
78-30-8	*tris(o-cresyl) phosphate*				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.63	U	0.526	2.63
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.63	U	0.526	2.63
6629-29-4	*2,4-Diamino-6-nitrotoluene*				

Quality Control Summary

High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLC **GEL Job No (SDG):** 2014-2960

Lab Code: GEL **HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
344332003	CAWA-14-54782	90.4	69 - 120	
344332012	CAWA-14-54783	88.8	69 - 120	
1203049042	MB for batch 1372042	80.4	69 - 120	
1203049043	CAWA-14-54783MS	88.8	69 - 120	
1203049044	CAWA-14-54783MSD	87.2	69 - 120	
1203049045	LCS for batch 1372042	82.8	69 - 120	

DNT = 3,4-Dinitrotoluene

Lab Code: GEL **HPLC Column:** YMC J'sphere ODS-H80

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
344332003	CAWA-14-54782	113	69 - 120	
344332012	CAWA-14-54783	120	69 - 120	
1203049042	MB for batch 1372042	102	69 - 120	
1203049043	CAWA-14-54783MS	108	69 - 120	
1203049044	CAWA-14-54783MSD	102	69 - 120	
1203049045	LCS for batch 1372042	112	69 - 120	

DNT = 3,4-Dinitrotoluene

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL LCS ID: 1203049045

GEL LCSDUP ID:

Analysis Date/Time: 20-MAR-14 02:30

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
1,3,5-Trinitrobenzene	5	3.94	78.8					70 - 117
2,4,6-Trinitrotoluene	5	4.51	90.2					70 - 121
2,4-Dinitrotoluene	5	4.11	82.2					70 - 115
2,6-Dinitrotoluene	5	4.07	81.4					70 - 109
2-Amino-4,6-dinitrotoluene	5	3.89	77.8					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.45	89					70 - 119
HMX	5	3.89	77.8					66 - 115
Nitrobenzene	5	3.7	74					69 - 113
PETN	5	3.39	67.8					67 - 121
RDX	5	3.74	74.8					70 - 125
Tetryl	5	3.88	77.6					65 - 120
m-Dinitrobenzene	5	3.97	79.4					70 - 115
m-Nitrotoluene	5	3.83	76.6					69 - 113
o-Nitrotoluene	5	3.89	77.8					66 - 111
p-Nitrotoluene	5	3.92	78.4					67 - 113

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL LCS ID: 1203049045

GEL LCSDUP ID:

Analysis Date/Time: 24-MAR-14 22:33

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
2,4-Diamino-6-nitrotoluene	5	4.18	83.6					70 - 109
2,6-Diamino-4-nitrotoluene	5	4.77	95.4					61 - 117
3,5-Dinitroaniline	5	4.88	97.6					70 - 117
TATB	5	5.99	120					32 - 169
tris(o-cresyl) phosphate	5	3.11	62.2					51 - 87

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL Spike ID: 1203049043

GEL SpikeDup ID: 1203049044

Analysis Date/Time: 20-MAR-14 10:41

MSD Analysis Date/Time: 20-MAR-14 11:16

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec	#	MSD Conc	MSD Rec	#	RPD	#	RPD Limit	Rec Limits
1,3,5-Trinitrobenzene	5.26316	0	4.68	89		4.62	84.6		1.32		20	60 - 120
2,4,6-Trinitrotoluene	5.26316	0	4.92	93.4		5.04	92.2		2.46		20	60 - 123
2,4-Dinitrotoluene	5.26316	0	4.76	90.4		4.54	83		4.79		20	60 - 119
2,6-Dinitrotoluene	5.26316	0	4.69	89.2		4.49	82.2		4.42		20	60 - 113
2-Amino-4,6-dinitrotoluene	5.26316	0	4.15	78.8		4.38	80.2		5.51		20	60 - 124
4-Amino-2,6-dinitrotoluene	5.26316	0	5.08	96.6		5.13	93.8		.812		20	63 - 133
HMX	5.26316	0	5.05	96		5.25	96		3.75		20	59 - 117
Nitrobenzene	5.26316	0	3.67	69.8		4.19	76.6		13		20	63 - 112
PETN	5.26316	0	3.85	73.2		4.14	75.8		7.24		20	65 - 118
RDX	5.26316	0	4.63	88		5.01	91.6		7.76		20	67 - 131
Tetryl	5.26316	0	4.08	77.6		4.47	81.8		9.02		20	44 - 109
m-Dinitrobenzene	5.26316	0	4.59	87.2		4.78	87.4		3.98		20	60 - 117
m-Nitrotoluene	5.26316	0	4.14	78.6		3.92	71.8		5.29		20	61 - 110
o-Nitrotoluene	5.26316	0	4.27	81.2		3.93	72		8.27		20	57 - 112
p-Nitrotoluene	5.26316	0	3.84	73		4	73.2		4.03		20	63 - 111

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

High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL Spike ID: 1203049043

GEL SpikeDup ID: 1203049044

Analysis Date/Time: 25-MAR-14 15:24

MSD Analysis Date/Time: 25-MAR-14 15:40

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec	#	MSD Conc	MSD Rec	#	RPD	#	RPD Limit	Rec Limits
2,4-Diamino-6-nitrotoluene	5.26316	0	4.08	77.6		4.78	87.4		15.6		20	68 - 116
2,6-Diamino-4-nitrotoluene	5.26316	0	4.44	84.4		4.99	91.4		11.7		20	53 - 124
3,5-Dinitroaniline	5.26316	0	5.13	97.4		5.45	99.8		6.19		20	67 - 123
TATB	5.26316	0	6.73	128	*	7.06	129	*	4.84		20	39 - 112
tris(o-cresyl) phosphate	5.26316	0	3.25	61.8		3.73	68.2		13.6		20	49 - 86

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

Quality Control Data

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319026.wiff

Date Analyzed: 20-MAR-14 01:55

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.250	U	0.080	0.250
118-96-7	*2,4,6-Trinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	0.250	U	0.080	0.250
121-14-2	*2,4-Dinitrotoluene*				
121-82-4	RDX	0.250	U	0.080	0.250
121-82-4	*RDX*				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.250	U	0.080	0.250
19406-51-0	*4-Amino-2,6-dinitrotoluene*				
2691-41-0	HMX	0.250	U	0.080	0.250
2691-41-0	*HMX*				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.250	U	0.080	0.250
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
606-20-2	2,6-Dinitrotoluene	0.250	U	0.080	0.250
606-20-2	*2,6-Dinitrotoluene*				
88-72-2	o-Nitrotoluene	0.250	U	0.082	0.250
88-72-2	*o-Nitrotoluene*				
98-95-3	Nitrobenzene	0.250	QU	0.080	0.250
98-95-3	*Nitrobenzene*				
99-08-1	m-Nitrotoluene	0.250	U	0.080	0.250
99-08-1	*m-Nitrotoluene*				
99-35-4	1,3,5-Trinitrobenzene	0.250	U	0.080	0.250
99-35-4	*1,3,5-Trinitrobenzene*				
99-65-0	m-Dinitrobenzene	0.250	U	0.080	0.250
99-65-0	*m-Dinitrobenzene*				
479-45-8	Tetryl	0.500	U	0.080	0.500
479-45-8	*Tetryl*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	0.500	U	0.100	0.500
78-11-5	*PETN*				
99-99-0	p-Nitrotoluene	0.500	U	0.150	0.500
99-99-0	*p-Nitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03250014.wiff

Date Analyzed: 25-MAR-14 14:50

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.00	U	0.300	1.00
3058-38-6	*TATB*				
618-87-1	3,5-Dinitroaniline	1.00	U	0.300	1.00
618-87-1	*3,5-Dinitroaniline*				
78-30-8	tris(o-cresyl) phosphate	1.00	U	0.300	1.00
78-30-8	*tris(o-cresyl) phosphate*				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.50	U	0.500	2.50
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.50	U	0.500	2.50
6629-29-4	*2,4-Diamino-6-nitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MS)MS

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319041.wiff

Date Analyzed: 20-MAR-14 10:41

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
98-95-3	Nitrobenzene	3.67	Q	0.0842	0.263
98-95-3	*Nitrobenzene*				
99-99-0	p-Nitrotoluene	3.84	Q	0.158	0.526
99-99-0	*p-Nitrotoluene*				
78-11-5	PETN	3.85		0.105	0.526
78-11-5	*PETN*				
479-45-8	Tetryl	4.08		0.0842	0.526
479-45-8	*Tetryl*				
99-08-1	m-Nitrotoluene	4.14		0.0842	0.263
99-08-1	*m-Nitrotoluene*				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.15		0.0842	0.263
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
88-72-2	o-Nitrotoluene	4.27		0.0863	0.263
88-72-2	*o-Nitrotoluene*				
99-65-0	m-Dinitrobenzene	4.59		0.0842	0.263
99-65-0	*m-Dinitrobenzene*				
121-82-4	RDX	4.63		0.0842	0.263
121-82-4	*RDX*				
99-35-4	1,3,5-Trinitrobenzene	4.68		0.0842	0.263
99-35-4	*1,3,5-Trinitrobenzene*				
606-20-2	2,6-Dinitrotoluene	4.69		0.0842	0.263
606-20-2	*2,6-Dinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	4.76		0.0842	0.263
121-14-2	*2,4-Dinitrotoluene*				
118-96-7	2,4,6-Trinitrotoluene	4.92		0.0842	0.263
118-96-7	*2,4,6-Trinitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MS)MS

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
2691-41-0	HMX	5.05		0.0842	0.263
2691-41-0	*HMX*				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.08		0.0842	0.263
19406-51-0	*4-Amino-2,6-dinitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MS)MS

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03250016.wiff

Date Analyzed: 25-MAR-14 15:24

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.25		0.316	1.05
78-30-8	*tris(o-cresyl) phosphate*				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.08		0.526	2.63
6629-29-4	*2,4-Diamino-6-nitrotoluene*				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.44		0.526	2.63
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
618-87-1	3,5-Dinitroaniline	5.13		0.316	1.05
618-87-1	*3,5-Dinitroaniline*				
3058-38-6	TATB	6.73		0.316	1.05
3058-38-6	*TATB*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319042.wiff

Date Analyzed: 20-MAR-14 11:16

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-08-1	m-Nitrotoluene	3.92		0.0874	0.273
99-08-1	*m-Nitrotoluene*				
88-72-2	o-Nitrotoluene	3.93		0.0896	0.273
88-72-2	*o-Nitrotoluene*				
99-99-0	p-Nitrotoluene	4	Q	0.164	0.546
99-99-0	*p-Nitrotoluene*				
78-11-5	PETN	4.14		0.109	0.546
78-11-5	*PETN*				
98-95-3	Nitrobenzene	4.19	Q	0.0874	0.273
98-95-3	*Nitrobenzene*				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.38		0.0874	0.273
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
479-45-8	Tetryl	4.47		0.0874	0.546
479-45-8	*Tetryl*				
606-20-2	2,6-Dinitrotoluene	4.49		0.0874	0.273
606-20-2	*2,6-Dinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	4.54		0.0874	0.273
121-14-2	*2,4-Dinitrotoluene*				
99-35-4	1,3,5-Trinitrobenzene	4.62		0.0874	0.273
99-35-4	*1,3,5-Trinitrobenzene*				
99-65-0	m-Dinitrobenzene	4.78		0.0874	0.273
99-65-0	*m-Dinitrobenzene*				
121-82-4	RDX	5.01		0.0874	0.273
121-82-4	*RDX*				
118-96-7	2,4,6-Trinitrotoluene	5.04		0.0874	0.273
118-96-7	*2,4,6-Trinitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
19406-51-0	4-Amino-2,6-dinitrotoluene	5.13		0.0874	0.273
19406-51-0	*4-Amino-2,6-dinitrotoluene*				
2691-41-0	HMX	5.25		0.0874	0.273
2691-41-0	*HMX*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-14-54783(344332012MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03250017.wiff

Date Analyzed: 25-MAR-14 15:40

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.73		0.328	1.09
78-30-8	*tris(o-cresyl) phosphate*				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.78		0.546	2.73
6629-29-4	*2,4-Diamino-6-nitrotoluene*				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.99		0.546	2.73
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
618-87-1	3,5-Dinitroaniline	5.45		0.328	1.09
618-87-1	*3,5-Dinitroaniline*				
3058-38-6	TATB	7.06		0.328	1.09
3058-38-6	*TATB*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319027.wiff

Date Analyzed: 20-MAR-14 02:30

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	3.39		0.100	0.500
78-11-5	*PETN*				
98-95-3	Nitrobenzene	3.7	Q	0.080	0.250
98-95-3	*Nitrobenzene*				
121-82-4	RDX	3.74		0.080	0.250
121-82-4	*RDX*				
99-08-1	m-Nitrotoluene	3.83		0.080	0.250
99-08-1	*m-Nitrotoluene*				
479-45-8	Tetryl	3.88		0.080	0.500
479-45-8	*Tetryl*				
2691-41-0	HMX	3.89		0.080	0.250
2691-41-0	*HMX*				
35572-78-2	2-Amino-4,6-dinitrotoluene	3.89		0.080	0.250
35572-78-2	*2-Amino-4,6-dinitrotoluene*				
88-72-2	o-Nitrotoluene	3.89		0.082	0.250
88-72-2	*o-Nitrotoluene*				
99-99-0	p-Nitrotoluene	3.92		0.150	0.500
99-99-0	*p-Nitrotoluene*				
99-35-4	1,3,5-Trinitrobenzene	3.94		0.080	0.250
99-35-4	*1,3,5-Trinitrobenzene*				
99-65-0	m-Dinitrobenzene	3.97		0.080	0.250
99-65-0	*m-Dinitrobenzene*				
606-20-2	2,6-Dinitrotoluene	4.07		0.080	0.250
606-20-2	*2,6-Dinitrotoluene*				
121-14-2	2,4-Dinitrotoluene	4.11		0.080	0.250
121-14-2	*2,4-Dinitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
19406-51-0	4-Amino-2,6-dinitrotoluene	4.45		0.080	0.250
19406-51-0	*4-Amino-2,6-dinitrotoluene*				
118-96-7	2,4,6-Trinitrotoluene	4.51		0.080	0.250
118-96-7	*2,4,6-Trinitrotoluene*				

High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2960

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 11-MAR-14

Moisture:

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS03240023.wiff

Date Analyzed: 24-MAR-14 22:33

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.11		0.300	1.00
78-30-8	*tris(o-cresyl) phosphate*				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.18		0.500	2.50
6629-29-4	*2,4-Diamino-6-nitrotoluene*				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.77		0.500	2.50
59229-75-3	*2,6-Diamino-4-nitrotoluene*				
618-87-1	3,5-Dinitroaniline	4.88		0.300	1.00
618-87-1	*3,5-Dinitroaniline*				
3058-38-6	TATB	5.99		0.300	1.00
3058-38-6	*TATB*				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 19-MAR-14 11:20

GEL Data File: EXP0319001.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 19-MAR-14 11:55

GEL Data File: EXP0319002.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 24-MAR-14 16:25

GEL Data File: EXS03240001.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 24-MAR-14 16:41

GEL Data File: EXS03240002.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 25-MAR-14 11:13

GEL Data File: EXS03250001.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK01

Analysis Date: 25-MAR-14 11:29

GEL Data File: EXS03250002.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 19-MAR-14 16:00

GEL Data File: EXP0319009.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 19-MAR-14 17:10

GEL Data File: EXP0319011.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 19-MAR-14 23:35

GEL Data File: EXP0319022.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 20-MAR-14 00:45

GEL Data File: EXP0319024.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 20-MAR-14 07:11

GEL Data File: EXP0319035.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 20-MAR-14 08:21

GEL Data File: EXP0319037.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 20-MAR-14 11:51

GEL Data File: EXP0319043.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 20-MAR-14 15:56

GEL Data File: EXP0319050.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	2.44
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 24-MAR-14 18:55

GEL Data File: EXS03240010.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	8.69
TATB	0	0
3,5-Dinitroaniline	0	1.87
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 24-MAR-14 19:28

GEL Data File: EXS03240012.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.45
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 24-MAR-14 21:42

GEL Data File: EXS03240020.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.4
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 25-MAR-14 00:46

GEL Data File: EXS03240031.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	2.57
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 25-MAR-14 01:20

GEL Data File: EXS03240033.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.48
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 25-MAR-14 03:17

GEL Data File: EXS03240040.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.88
TATB	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 25-MAR-14 13:43

GEL Data File: EXS03250010.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	9.06
TATB	0	0
3,5-Dinitroaniline	0	1.85
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 25-MAR-14 14:17

GEL Data File: EXS03250012.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.96
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 25-MAR-14 16:30

GEL Data File: EXS03250020.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.61
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2960

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 25-MAR-14 17:04

GEL Data File: EXS03250022.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	2.81
TATB	0	0

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
27-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LC-MS/MS	SW846 3535/8321A Modified	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1372044	See Below		

Potentially affected work order(s)(SDG): **344112(2014-2944),344227(2014-2943),344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960)**

Application Issues:

Failed Recovery for MS/PS

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. The MS (1203049043) did not meet acceptance criteria for the recovery of TATB at 128%. The limits are 39-112%. 2. The MSD (1203049044) did not meet acceptance criteria for the recovery of TATB at 129%. The limits are 39-112%.	1. & 2. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER. The discrepancies are noted in the Case Narrative.

Originator's Name:

Lynne Russell 28-MAR-14

Data Validator/Group Leader:

Michael Penny 28-MAR-14

Pesticide Analysis

Case Narrative

Pesticide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Analysis of 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP) in Water by GC/ECD Using Methods 504.1 or 8011**
Analytical Method:	SW846 8011
Prep Method:	SW846 8011 PREP
Analytical Batch Number:	1371932
Prep Batch Number:	1371931

Sample Analysis

Sample ID	Client ID
344332001	CAWA-14-54782
344332008	CAWA-14-54780
344332010	CAWA-14-54783
344332017	CAWA-14-54781
1203048763	Method Blank (MB)
1203048764	Laboratory Control Sample (LCS)
1203048765	Laboratory Control Sample Duplicate (LCSD)

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-059 REV# 12.

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

Calibration Information

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

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

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this analytical batch for this SDG.

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

Laboratory Control Sample Duplicate (LCSD) Recovery
The laboratory control sample duplicate (LCSD) spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD values between the LCS and LCSD met the acceptance limits.

QC Sample Designation
Matrix spike and matrix spike duplicate analyses were not performed on a sample in this batch for this SDG.

Matrix Spike (MS) Recovery Statement
Matrix spike and matrix spike duplicate analyses were not performed on a sample in this batch for this SDG.

Matrix Spike Duplicate (MSD) Recovery Statement
Matrix spike and matrix spike duplicate analyses were not performed on a sample in this batch for this SDG.

MS/MSD Relative Percent Difference (RPD) Statement
Matrix spike and matrix spike duplicate analyses were not performed on a sample in this batch for this SDG.

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 in this analytical batch met the specified holding time.

Sample preservation
The following sample s had a pH of 2: 344332008 (CAWA-14-54780) and 344332017 (CAWA-14-54781).

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows.

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

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

Miscellaneous Information:

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data 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
Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this pesticide fraction.

Additional Comments
The higher result is reported.

System Configuration

The 504.1/8011 analysis of EDB/DBCP was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD1A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)
ECD1A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	ZB-50-504/8011	30m x 0.53mm, 1.00um
ECD1A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)
ECD1A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	ZB-XLB-504/8	30m x 0.53mm, 1.50um

Method/Analysis Information

Procedure:	**Organochlorine Pesticides and Chlorinated Hydrocarbons**
Analytical Method:	SW846 3535A/8081B
Prep Method:	SW846 3535A
Analytical Batch Number:	1372108
Prep Batch Number:	1372105

Sample Analysis

Sample ID	Client ID
344332005	CAWA-14-54782
344332014	CAWA-14-54783
1203049231	Method Blank (MB)
1203049232	344291005(CAWA-14-54733) Matrix Spike (MS)
1203049233	Laboratory Control Sample (LCS)
1203049234	Laboratory Control Sample Duplicate (LCSD)

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-041 REV# 13.

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

Calibration Information

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

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

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement
Target analyte Hexachlorobenzene was detected in the 1203049231 (MB) above the PQL on one column and above the MDL but below the PQL on the other column. Target analyte Hexachlorobenzene was not detected in the associated samples. The data are reported.

Surrogate Recoveries
The 1203049234 (LCSD) recovered surrogates DCB at 34% on one column and at 30.5% on the other column (limits are 41-124%) and 4cmx at 30.2% on one column and at 26.6% on the other column (limits are 36-106%). The 1203049234LCSD failed surrogate recovery. The LCS passed surrogate recovery on both columns. The MS

passed surrogate recovery on both columns. A MSD was not extracted. The project manager requested the data reported.

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

Laboratory Control Sample Duplicate (LCSD) Recovery
The 1203049234 (LCSD) recovered Hexachlorobenzene at 32.5% on one column and at 25.9% on the other column. The limits are 50-150%. The 1203049234LCSD failed spike recovery. The LCS passed spike recovery on both columns. The MS passed spike recovery on both column. A MSD was not extracted. The project manager requested the data reported.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD value between the 1203049233 (LCS) and 1203049234 (LCSD) was not within the 0-30% limits for Hexachlorobenzene at 91.4% on one column and at 95.3% on the other column. This RPD failure is attributed to the large difference in the recovery value between analyte pair in the LCS and LCSD. The project manager requested the data reported.

QC Sample Designation
Sample 344291005 (CAWA-14-54733) was selected for the matrix spike analysis.

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

Matrix Spike Duplicate (MSD) Recovery Statement
Matrix spike duplicate analysis was not performed on a sample in this batch for this SDG.

MS/MSD Relative Percent Difference (RPD) Statement
Matrix spike duplicate analysis was not performed on a sample in this batch for this SDG.

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 in this analytical batch met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP. All reported analyte detections in client and quality control samples were within the established retention time windows.

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

Sample Re-extraction/Re-analysis
The 1203049234 (LCSD) recovered surrogates DCB at 34% on one column and at 30.5% on the other column (limits are 41-124%) and 4cmx at 30.2% on one column and at 26.6% on the other column (limits are 36-106%). The 1203049234LCSD failed surrogate recovery. The LCS passed surrogate recovery. The MS passed surrogate recovery on both column. A MSD was not extracted. The project manager requested the data reported.

Florisil
Florisil clean-up was not performed on client and quality control samples in this batch.

Miscellaneous Information:

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation
Data exception report 1274989 was generated for the samples in this batch for this SDG.

Manual Integrations
Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this pesticide fraction.

Additional Comments
The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

Detected target analytes were reported from the analytical column with the lower concentration. Results below the method detection limit (non-detects) were reported from column one.

Due to software issue, the surrogate recovery range was not indicated or possibly indicated incorrectly in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate recovery acceptance limits.

Due to rounding differences in the calculation between the forms, the data reported in Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD5A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)
ECD5A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticide II)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014−2960 GEL Work Order: 344332

The Qualifiers in this report are defined as follows:

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

** Analyte is a surrogate compound

B The target analyte was detected in the associated blank.

J Value is estimated

P Organics−−The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.

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: **07 APR 2014** **Title:** **Data Validator**

Sample Data Summary

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332001**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 19:54**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 15:11**	**Aliquot:**	**35.66 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1924.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1924.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0196	ug/L	0.00589	0.0196	1
106-93-4	1,2-Dibromoethane	U	0.0196	ug/L	0.00589	0.0196	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.39	3.51	ug/L	96.8	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332005**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 21:07**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1319.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1319.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.020	ug/L	0.00625	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.707	1.00	ug/L	70.7	(36%-106%)
Decachlorobiphenyl	0.738	1.00	ug/L	73.8	(41%-124%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332008**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54780**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 20:15**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 15:11**	**Aliquot:**	**34.68 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1925.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1925.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0202	ug/L	0.00606	0.0202	1
106-93-4	1,2-Dibromoethane	U	0.0202	ug/L	0.00606	0.0202	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	4.04	3.60	ug/L	112	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332010**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 20:36**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 15:11**	**Aliquot:**	**35.22 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1926.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1926.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0199	ug/L	0.00596	0.0199	1
106-93-4	1,2-Dibromoethane	U	0.0199	ug/L	0.00596	0.0199	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.50	3.55	ug/L	98.5	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332014**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 21:22**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**980 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1320.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1320.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0204	ug/L	0.00638	0.0204	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.744	1.02	ug/L	72.9	(36%-106%)
Decachlorobiphenyl	0.763	1.02	ug/L	74.8	(41%-124%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332017**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54781**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 20:58**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 15:11**	**Aliquot:**	**34.85 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1927.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1927.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0201	ug/L	0.00603	0.0201	1
106-93-4	1,2-Dibromoethane	U	0.0201	ug/L	0.00603	0.0201	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.94	3.59	ug/L	110	(73%-135%)

Quality Control Summary

Pesticide

Surrogate Recovery Report

SDG Number: 2014-2960

Matrix Type: LIQUID

Sample ID	Client ID	BFB 1 %REC #	BFB 2 %REC #
1203048763	MB for batch 1371931	102	99
1203048764	LCS for batch 1371931	106	108
1203048765	LCSD for batch 1371931	100	101
344332001	CAWA-14-54782	97	90
344332008	CAWA-14-54780	112	95
344332010	CAWA-14-54783	99	90
344332017	CAWA-14-54781	110	90

Surrogate	Acceptance Limits
BFB = Bromofluorobenzene	(73%-135%)

* Recovery outside Acceptance Limits
\# Column to be used to flag recovery values
D Sample Diluted

Pesticide

Surrogate Recovery Report

SDG Number: 2014-2960

Matrix Type: LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203049231	MB for batch 1372105	80	73	89	82
1203049233	LCS for batch 1372105	81	73	87	79
1203049234	LCSD for batch 1372105	30 *	27 *	34 *	31 *
1203049232	CAWA-14-54733MS	83	71	85	76
344332005	CAWA-14-54782	78	71	84	74
344332014	CAWA-14-54783	80	73	86	75

Surrogate		Acceptance Limits
4CMX	= 4cmx	(36%-106%)
DCB	= Decachlorobiphenyl	(41%-124%)

* Recovery outside Acceptance Limits
\# Column to be used to flag recovery values
D Sample Diluted

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Sample Type: **Laboratory Control Sample**
Client ID: **LCS for batch 1371931**
Matrix: **WATER**
Lab Sample ID **1203048764**
Instrument: **ECD1A.I**
Analysis Date: **03/19/2014 14:59**
Dilution: 1
Analyst: **RXE1**
Prep Batch ID: **1371931**
Inj. Vol: **1 uL**
Batch ID: **1371932**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-93-4	LCS	1,2-Dibromoethane	0.200	0.0	0.206	103	70-130
96-12-8	LCS	1,2-Dibromo-3-chloropropane	0.200	0.0	0.216	108	70-130

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCSD for batch 1371931**
Lab Sample ID **1203048765**
Instrument: **ECD1A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **03/19/2014 15:20**
Dilution: 1
Prep Batch ID: **1371931**
Batch ID: **1371932**

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-93-4	LCSD 1,2-Dibromoethane	0.200	0.0	0.206	103	70-130	0	0-20
96-12-8	LCSD 1,2-Dibromo-3-chloropropane	0.200	0.0	0.211	106	70-130	2	0-20

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54733MS**
Lab Sample ID **1203049232**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/13/2014 18:53**
Prep Batch ID: **1372105**
Batch ID: **1372108**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS	Hexachlorobenzene	0.102	0.00	U	0.0949	93	50-150

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1372105**
Lab Sample ID **1203049233**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **03/13/2014 18:08**
Dilution: 1
Prep Batch ID: **1372105**
Batch ID: **1372108**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	LCS	Hexachlorobenzene	0.100	0.0	0.073	73	50-150

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCSD for batch 1372105**
Lab Sample ID **1203049234**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **03/13/2014 18:23**
Dilution: 1
Prep Batch ID: **1372105**
Batch ID: **1372108**

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
118-74-1	LCSD Hexachlorobenzene	0.100	0.0	0.0259	26 *	50-150	95 *	0-30

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1371931**	**Instrument ID:**	**ECD1A.I_1** **ECD1A.I_2**	**Data File:**	**031914HE\E1C1909.D** **031914HE\E1C1909.D**
Lab Sample ID:	**1203048763**				
Column:	**ZB-50** **ZB-XLB**	**Prep Date:**	**03/19/2014 14:16**	**Analyzed:**	**03/19/14 14:38**

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 1371931	**1203048764**	**031914HE\E1C1910.D** **031914HE\E1C1910.D**	**03/19/14**	**1459**
02 LCSD for batch 1371931	**1203048765**	**031914HE\E1C1911.D** **031914HE\E1C1911.D**	**03/19/14**	**1520**
03 CAWA-14-54782	**344332001**	**031914HE\E1C1924.D** **031914HE\E1C1924.D**	**03/19/14**	**1954**
04 CAWA-14-54780	**344332008**	**031914HE\E1C1925.D** **031914HE\E1C1925.D**	**03/19/14**	**2015**
05 CAWA-14-54783	**344332010**	**031914HE\E1C1926.D** **031914HE\E1C1926.D**	**03/19/14**	**2036**
06 CAWA-14-54781	**344332017**	**031914HE\E1C1927.D** **031914HE\E1C1927.D**	**03/19/14**	**2058**

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1372105**	**Instrument ID:**	**ECD5A.I_2**	**Data File:**	**031314.S\e5c1306.D**
Lab Sample ID:	**1203049231**	**Prep Date:**	**03/13/2014 05:20**	**Analyzed:**	**03/13/14 17:53**
Column:	**Rtx-CLPesticides2**				

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 1372105	1203049233	031314.S\e5c1307.D	03/13/14	1808
02 LCSD for batch 1372105	1203049234	031314.S\e5c1308.D	03/13/14	1823
03 CAWA-14-54733MS	1203049232	031314.S\e5c1310.D 031314.S\e5c1310.D	03/13/14	1853
04 CAWA-14-54782	344332005	031314.S\e5c1319.D 031314.S\e5c1319.D	03/13/14	2107
05 CAWA-14-54783	344332014	031314.S\e5c1320.D 031314.S\e5c1320.D	03/13/14	2122

Quality Control Data

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048763**				
Client Sample:	**QC for batch 1371931**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1371931**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 14:38**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 14:16**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1909.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1909.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.006	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.65	3.57	ug/L	102	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048764**				
Client Sample:	**QC for batch 1371931**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1371931**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 14:59**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 14:16**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1910.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1910.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.216	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.206	ug/L	0.006	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.84	3.57	ug/L	108	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203048765**				
Client Sample:	**QC for batch 1371931**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1371931**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1371932**	**Inst:**	**ECD1A.I**	**Dilution:**	**1**
Run Date:	**03/19/2014 15:20**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/19/2014 14:16**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**031914HE\E1C1911.D**	**Column:**	**1 ZB-50**		
	031914HE\E1C1911.D		**2 ZB-XLB**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.211	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.206	ug/L	0.006	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
Bromofluorobenzene	3.59	3.57	ug/L	101	(73%-135%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049231**				
Client Sample:	**QC for batch 1372105**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1372105**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 17:53**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1306.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1306.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	JP	0.0152	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.730	1.00	ug/L	73.0	(36%-106%)
Decachlorobiphenyl	0.823	1.00	ug/L	82.3	(41%-124%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/06/2014 11:00**	**Matrix:**	**W**
Lab Sample ID:	**1203049232**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1372105**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54733MS**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 18:53**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**980 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1310.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1310.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	B	0.0949	ug/L	0.00638	0.0204	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.725	1.02	ug/L	71.1	(36%-106%)
Decachlorobiphenyl	0.780	1.02	ug/L	76.4	(41%-124%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049233**				
Client Sample:	**QC for batch 1372105**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1372105**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 18:08**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1307.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1307.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	B	0.073	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.730	1.00	ug/L	73.0	(36%-106%)
Decachlorobiphenyl	0.787	1.00	ug/L	78.7	(41%-124%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**WATER**
Lab Sample ID:	**1203049234**				
Client Sample:	**QC for batch 1372105**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1372105**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1372108**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**03/13/2014 18:23**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/13/2014 05:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**031314.S\e5c1308.D**	**Column:**	**1 Rtx-CLPesticides**		
	031314.S\e5c1308.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	B	0.0259	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
4cmx	0.266	1.00	ug/L	26.6	*	(36%-106%)
Decachlorobiphenyl	0.305	1.00	ug/L	30.5	*	(41%-124%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
16-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/ECD	SW846 3535A/8081B	Liquid	ARSL (ESHL)
Batch ID:	**Sample Numbers:**		
1372108	See Below		

Potentially affected work order(s)(SDG): **344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344383(2014-2971),344384(2014-2970)**

Application Issues:

Failed RPD for MS/MSD, or PS/PSD

Method Blank contamination

Failed Recovery for LCS/LCSD

Failed Yield for Surrogates

Specification and Requirements Exception Description:	DER Disposition:
1. Target analyte Hexachlorobenzene was detected in the 1203049231MB above the PQL on one column and above the MDL but below the PQL on the other column.	1. Target analyte Hexachlorobenzene was not detected in the associated samples. The data are reported.
2. The 1203049234LCSD recovered surrogates DCB at 34% on one column and at 30.5% on the other column (limits are 41-124%) and 4cmx at 30.2% on one column and at 26.6% on the other column (limits are 36-106%).	2. The 1203049234LCSD failed surrogate recovery. The LCS passed surrogate recovery on both columns. The MS passed surrogate recovery on both columns. A MSD was not extracted. The project manager requested the data reported.
3. The 1203049234LCSD recovered Hexachlorobenzene at 32.5% on one column and at 25.9% on the other column. The limits are 50-150%.	3. The 1203049234LCSD failed spike recovery. The LCS passed spike recovery on both columns. The MS passed spike recovery on both column. A MSD was not extracted. The project manager requested the data reported.
4. The RPD value between the 1203049233LCS and 1203049234LCSD was not within the 0-30% limits for Hexachlorobenzene at 91.4% on one column and at 95.3% on the other column.	4. This RPD failure is attributed to the large difference in the recovery value between analyte pair in the LCS and LCSD. The project manager requested the data reported.

Originator's Name:

Lloyd O Fox 16-MAR-14

Data Validator/Group Leader:

Herbert Maier 18-MAR-14

Herbicide Analysis

Case Narrative

Herbicide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Procedure:	**Analysis of Chlorophenoxy Acid Herbicides by ECD**
Analytical Method:	SW846 8151A
Prep Method:	SW846 8151A
Analytical Batch Number:	1371877
Prep Batch Number:	1371876

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 8151A:

Sample ID	Client ID
344332006	CAWA-14-54782
344332015	CAWA-14-54783
1203048599	Method Blank (MB)
1203048600	Laboratory Control Sample (LCS)
1203048891	344332006(CAWA-14-54782) Matrix Spike (MS)
1203048894	Laboratory Control Sample Duplicate (LCSD)

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-011 REV# 21.

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

Calibration Information

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

Continuing Calibration Verification (CCV) Requirements
Not all calibration verification standards (CVS, ICV, or CCV) requirements have been met for this SDG. Pentachlorophenol failed acceptance criteria with a positive bias on both columns in the Initial Calibration Verification Standards (ICV). Since Pentachlorophenol was not detected in the associated client samples, the biased high recovery had no adverse impact on the data and the results have been reported. The instrument was re-calibrated at the beginning of the next sequence. Pentachlorophenol and the surrogate failed acceptance

criteria with a positive bias on one or both analytical columns in the standards bracketing the samples in this SDG. Since there were no target analytes detected in the samples, the non-compliance had no adverse impact on the data. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
The MS1203048891 (CAWA-14-54782) did not meet surrogate recovery acceptance criteria. Since there were no target analytes detected in the associated parent sample, the biased high surrogate recovery had no adverse impact on the data and the results have been reported.

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

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

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation
Sample 344332006 (CAWA-14-54782) was selected for analysis as the matrix spike. A matrix spike duplicate was not extracted or analyzed with this SDG. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

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

Matrix Spike Duplicate (MSD) Recovery Statement
There was no matrix spike duplicate extracted and analyzed, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes. The data have been reported for samples 344332006 (CAWA-14-54782) and 344332015 (CAWA-14-54783).

MS/MSD Relative Percent Difference (RPD) Statement
There are no reportable MS/MSD RDP values since a MSD was not extracted and analyzed, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes. The data have been reported for samples 344332006 (CAWA-14-54782) and 344332015 (CAWA-14-54783).

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. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported target analyte concentrations were confirmed on a dissimilar column.

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

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

Miscellaneous Information

Electronic Package 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 of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1274937.

Manual Integrations
Some initial calibration standards, continuing calibration standards, and/or samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this Herbicide fraction.

Additional Comments
The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The higher results from either column have been chosen and reported in the data package for samples 344332006 (CAWA-14-54782) and 344332015 (CAWA-14-54783), MB and LCS. The data reported for the MS are from the same analytical column as the parent sample. The data reported for the LCSD are from the same analytical column as the LCS.

Due to rounding differences in the calculation between the forms, the data reported in the Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

Due to software issue, the raw data may not correctly display the updated SPC limits. Please see Sample Data Summary Report and Surrogate Recovery Report for the correct surrogate acceptance limits.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD3A.I_1	Agilent 7890A GC with duel uECD	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)

ECD3A.I_2	Agilent 7890A GC with duel uECD	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticideII)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

The Qualifiers in this report are defined as follows:

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

** Analyte is a surrogate compound

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

Date: 02 APR 2014 **Title: Data Validator**

Sample Data Summary

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**344332006**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54782**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 10:52**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**960 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1341.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1341.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.260	ug/L	0.0521	0.260	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.10	5.21	ug/L	117	(43%-137%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 12:08**	**Matrix:**	**W**
Lab Sample ID:	**344332015**	**Date Received:**	**03/11/2014 09:00**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAWA-14-54783**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 11:45**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**980 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1343.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1343.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.255	ug/L	0.051	0.255	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.43	5.10	ug/L	106	(43%-137%)

Quality Control Summary

Herbicide

Surrogate Recovery Report

SDG Number: 2014-2960

Matrix Type: LIQUID

Sample ID	Client ID	DCAA 1 %REC #	DCAA 2 %REC #
1203048599	MB for batch 1371876	108	106
1203048600	LCS for batch 1371876	112	130
1203048894	LCSD for batch 1371876	114	131
344332006	CAWA-14-54782	117	103
1203048891	CAWA-14-54782MS	114	148 *
344332015	CAWA-14-54783	106	90

Surrogate	Acceptance Limits
DCAA = 2,4-Dichlorophenylacetic acid	(43%-137%)

* Recovery outside Acceptance Limits
\# Column to be used to flag recovery values
D Sample Diluted

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCS for batch 1371876**
Lab Sample ID **1203048600**
Instrument: **ECD3A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **GROUND WATER**
Analysis Date: **03/14/2014 03:39**
Prep Batch ID: **1371876**
Batch ID: **1371877**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	LCS	Pentachlorophenol	2.00	0.0	2.16	108	55-113

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **LCSD for batch 1371876**
Lab Sample ID **1203048894**
Instrument: **ECD3A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **GROUND WATER**
Analysis Date: **03/14/2014 04:05**
Dilution: 1
Prep Batch ID: **1371876**
Batch ID: **1371877**

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
87-86-5	LCSD Pentachlorophenol	2.00	0.0	1.70	85	55-113	24	0-30

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2014-2960**
Client ID: **CAWA-14-54782MS**
Lab Sample ID **1203048891**
Instrument: **ECD3A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **03/14/2014 11:18**
Prep Batch ID: **1371876**
Batch ID: **1371877**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS	Pentachlorophenol	2.13	0.00	U	1.83	86	37-114

Method Blank Summary

SDG Number:	**2014-2960**	**Client:**	**ARSL004**	**Matrix:**	**GROUND WATER**
Client ID:	**MB for batch 1371876**	**Instrument ID:**	**ECD3A.I_1** **ECD3A.I_2**	**Data File:**	**031314.B\e3c1323.D** **031314.B\e3c1323.D**
Lab Sample ID:	**1203048599**				
Column:	**RTX-CLPEST 1** **RTX-CLPEST 2**	**Prep Date:**	**03/12/2014 04:25**	**Analyzed:**	**03/14/14 03:13**

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 1371876	**1203048600**	**031314.B\e3c1324.D** **031314.B\e3c1324.D**	**03/14/14**	**0339**
02 LCSD for batch 1371876	**1203048894**	**031314.B\e3c1325.D** **031314.B\e3c1325.D**	**03/14/14**	**0405**
03 CAWA-14-54782	**344332006**	**031314.B\e3c1341.D** **031314.B\e3c1341.D**	**03/14/14**	**1052**
04 CAWA-14-54782MS	**1203048891**	**031314.B\e3c1342.D** **031314.B\e3c1342.D**	**03/14/14**	**1118**
05 CAWA-14-54783	**344332015**	**031314.B\e3c1343.D** **031314.B\e3c1343.D**	**03/14/14**	**1145**

Quality Control Data

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1203048599**				
Client Sample:	**QC for batch 1371876**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1371876**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 03:13**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1323.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1323.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.250	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.39	5.00	ug/L	108	(43%-137%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1203048600**				
Client Sample:	**QC for batch 1371876**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1371876**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 03:39**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1324.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1324.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		2.16	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.50	5.00	ug/L	130	(43%-137%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**	**Date Collected:**	**03/07/2014 09:52**	**Matrix:**	**W**
Lab Sample ID:	**1203048891**	**Date Received:**	**03/11/2014 09:00**		
Client Sample:	**QC for batch 1371876**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAWA-14-54782MS**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 11:18**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**940 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1342.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1342.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.83	ug/L	0.0532	0.266	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.05	5.32	ug/L	114	(43%-137%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2014-2960**			**Matrix:**	**GROUND WATER**
Lab Sample ID:	**1203048894**				
Client Sample:	**QC for batch 1371876**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1371876**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1371877**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**03/14/2014 04:05**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**03/12/2014 04:25**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**031314.B\e3c1325.D**	**Column:**	**1 RTX-CLPEST 1**		
	031314.B\e3c1325.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.70	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.56	5.00	ug/L	131	(43%-137%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
14-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/ECD	SW846 8151A	Liquid	BRKL, ESHL, WSRB
Batch ID:	**Sample Numbers:**		
1371877	See Below		

Potentially affected work order(s)(SDG): **344200,344227(2014-2943),344291(2014-2957),344293(2014-2958),344296(2014-2959),344326(34440),344332(2014-2960)**

Application Issues:

Failed Yield for Surrogates

Specification and Requirements Exception Description:	DER Disposition:
1. Sample 344326002 did not meet surrogate recovery acceptance criteria.	1. Since there were no target analytes detected in the associated sample, the biased high surrogate recovery had no adverse impact on the data and the results have been reported.
2. The MSD(1203048602) and the MS(1203048891) did not meet surrogate recovery acceptance criteria.	2. Since there were no target analytes detected in the associated parent samples, the biased high surrogate recovery had no adverse impact on the data and the results have been reported.

Originator's Name:

Lloyd O Fox 14-MAR-14

Data Validator/Group Leader:

Barbara Bailey 17-MAR-14

Metals Analysis

Case Narrative

Metals Fractional Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Sample Analysis

Sample ID	Client ID
344332004	CAWA-14-54782
344332007	CAWA-14-54784
344332013	CAWA-14-54783
344332016	CAWA-14-54785
1203050007	Method Blank (MB) **ICP**
1203050008	Laboratory Control Sample (LCS)
1203050012	344383007(CAWA-14-54768L) Serial Dilution (SD)
1203050009	344383007(CAWA-14-54768D) Sample Duplicate (DUP)
1203050010	344383007(CAWA-14-54768S) Matrix Spike (MS)
1203048997	Method Blank (MB) **ICP-MS**
1203048998	Laboratory Control Sample (LCS)
1203049001	344334006(CACV-14-49264L) Serial Dilution (SD)
1203048999	344334006(CACV-14-49264D) Sample Duplicate (DUP)
1203049000	344334006(CACV-14-49264S) Matrix Spike (MS)
1203056730	344334006(CACV-14-49264PS) Post Spike (PS)
1203056170	Method Blank (MB) **CVAA**
1203056952	Method Blank (MB) **CVAA**
1203056171	Laboratory Control Sample (LCS)
1203056953	Laboratory Control Sample (LCS)
1203056958	344332004(CAWA-14-54782L) Serial Dilution (SD)
1203056174	344334006(CACV-14-49264L) Serial Dilution (SD)
1203056957	344332004(CAWA-14-54782D) Sample Duplicate (DUP)
1203056172	344334006(CACV-14-49264D) Sample Duplicate (DUP)
1203056959	344332004(CAWA-14-54782S) Matrix Spike (MS)
1203056173	344334006(CACV-14-49264S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch: 1372413, 1372024, 1375114, 1375404 and 1377798
Prep Batch : 1372412, 1372023, 1375113 and 1375403

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# 27 and GL-GC-E-107 REV# 9
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, 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, quadrupole 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
The CRDL standard recoveries met the advisory control limits except for potassium in the closing PQL standard in file 032814-1 at 18:52. Potassium recovered high, however client sample concentrations were greater than two times the PQL.

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: 344383007 (CAWA-14-54768)-ICP, 344334006 (CACV-14-49264)-ICP-MS and CVAA and 344332004 (CAWA-14-54782)-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 did not meet all the recommended quality control acceptance criteria for percent recoveries for the applicable analytes. The thallium recovery was not within the acceptance limits in sample 1203049000 (CACV-14-49264)-ICP-MS. See data exception report (DER ID 1278160) in the miscellaneous data section of this data package.

Duplicate Relative Percent Difference (RPD) Statement
The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to

evaluate the DUP results. 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 acceptance criteria.

Post Spike (PS) Recovery Statement
The percent recoveries (%R) obtained from the PS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The PS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes and verifies the absence of matrix interferences in the post-digested sample.

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. Data exception report (DER ID 1278160) was generated for this SDG.

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

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: Pat Steele **Date:** 04/07/2014

Sample Data Summary

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance 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 Pat Steele 04/07/2014

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 344332004 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54782 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/27/14 10:49	032714W1−6	1375404

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1375404	1375403	EPA 245.1/245.2 Prep	20	mL	20	mL	03/26/14	AXS5

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 344332007 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54784 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/26/14 10:38	032614W1−5	1375114

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** SW846

SAMPLE ID: 344332007 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54784 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/21/14 17:02	032114−2	1372413
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−38−2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−39−3	Barium	26.1	ug/L		1	5	5	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−42−8	Boron	50	ug/L	U	15	50	50	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−43−9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−70−2	Calcium	9710	ug/L		50	200	200	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−47−3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	03/21/14 17:02	032114−2	1372413
7439−89−6	Iron	80.1	ug/L	J	30	100	100	1	P	HSC	03/28/14 18:13	032814−1	1372413
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7439−95−4	Magnesium	2830	ug/L		110	300	300	1	P	HSC	03/21/14 17:02	032114−2	1372413
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	03/21/14 17:02	032114−2	1372413
7439−98−7	Molybdenum	0.922	ug/L		0.165	0.5	0.5	1	MS	BAJ	03/27/14 09:44	140326−4	1372024
7440−02−0	Nickel	2	ug/L	U	0.5	2	2	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−09−7	Potassium	1380	ug/L		50	150	150	1	P	HSC	03/28/14 18:13	032814−1	1372413
7782−49−2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7631−86−9	Silica	64100	ug/L		53	213	213	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−22−4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−23−5	Sodium	10100	ug/L		100	300	300	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−24−6	Strontium	48.6	ug/L		1	5	5	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−28−0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−31−5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−61−1	Uranium	0.501	ug/L		0.067	0.2	0.2	1	MS	BAJ	03/26/14 06:48	140325−3	1372024
7440−62−2	Vanadium	4.83	ug/L	J	1	5	5	1	P	HSC	03/21/14 17:02	032114−2	1372413
7440−66−6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	03/21/14 17:02	032114−2	1372413

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:**

SAMPLE ID: 344332007 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54784 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	35.9	mg/L		0.453	1.24	1.24	1		JJ2	04/04/14 14:19		1377798

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1372024	1372023	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1372413	1372412	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1375114	1375113	EPA 245.1/245.2 Prep	20	mL	20	mL	03/25/14	AXS5

***Analytical Methods:**

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

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 344332013 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54783 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/26/14 10:40	032614W1−5	1375114

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1375114	1375113	EPA 245.1/245.2 Prep	20	mL	20	mL	03/25/14	AXS5

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 344332016 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54785 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/26/14 10:41	032614W1−5	1375114

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:** SW846

SAMPLE ID: 344332016 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54785 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	03/21/14 17:05	032114−2	1372413
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−38−2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−39−3	Barium	9.27	ug/L		1	5	5	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−42−8	Boron	50	ug/L	U	15	50	50	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−43−9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−70−2	Calcium	8110	ug/L		50	200	200	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−47−3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	03/21/14 17:05	032114−2	1372413
7439−89−6	Iron	90.3	ug/L	J	30	100	100	1	P	HSC	03/28/14 18:23	032814−1	1372413
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7439−95−4	Magnesium	2290	ug/L		110	300	300	1	P	HSC	03/21/14 17:05	032114−2	1372413
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	03/21/14 17:05	032114−2	1372413
7439−98−7	Molybdenum	1.59	ug/L		0.165	0.5	0.5	1	MS	BAJ	03/27/14 10:01	140326−4	1372024
7440−02−0	Nickel	0.875	ug/L	J	0.5	2	2	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−09−7	Potassium	784	ug/L		50	150	150	1	P	HSC	03/28/14 18:23	032814−1	1372413
7782−49−2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7631−86−9	Silica	63900	ug/L		53	213	213	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−22−4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−23−5	Sodium	9890	ug/L		100	300	300	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−24−6	Strontium	46.7	ug/L		1	5	5	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−28−0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−31−5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−61−1	Uranium	0.250	ug/L		0.067	0.2	0.2	1	MS	BAJ	03/26/14 07:14	140325−3	1372024
7440−62−2	Vanadium	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 17:05	032114−2	1372413
7440−66−6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	03/21/14 17:05	032114−2	1372413

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014−2960 **CONTRACT:** ESHL00714 **METHOD TYPE:**

SAMPLE ID: 344332016 **BASIS:** As Received **DATE COLLECTED** 07−MAR−14

CLIENT ID: CAWA−14−54785 **LEVEL:** Low **DATE RECEIVED** 11−MAR−14

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	29.7	mg/L		0.453	1.24	1.24	1		JJ2	04/04/14 14:19		1377798

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1372024	1372023	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1372413	1372412	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1375114	1375113	EPA 245.1/245.2 Prep	20	mL	20	mL	03/25/14	AXS5

***Analytical Methods:**

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

Quality Control Summary

METALS
−3b−
PREPARATION BLANK SUMMARY

SDG NO. 2014−2960

Contract: ESHL00714

Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
1203048997								
	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
	Lead	0.5	ug/L	+/−2	U	MS	0.5	2
	Molybdenum	0.165	ug/L	+/−0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/−2	U	MS	0.5	2
	Selenium	1.5	ug/L	+/−5	U	MS	1.5	5
	Silver	0.2	ug/L	+/−1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/−2	U	MS	0.45	2
	Antimony	1	ug/L	+/−3	U	MS	1	3
	Uranium	0.088	ug/L	+/−0.2	J	MS	0.067	0.2
1203050007								
	Aluminum	68	ug/L	+/−200	U	P	68	200
	Barium	1	ug/L	+/−5	U	P	1	5
	Beryllium	1	ug/L	+/−5	U	P	1	5
	Boron	15	ug/L	+/−50	U	P	15	50
	Calcium	50	ug/L	+/−200	U	P	50	200
	Cobalt	1	ug/L	+/−5	U	P	1	5
	Copper	3	ug/L	+/−10	U	P	3	10
	Iron	83.7	ug/L	+/−100	J	P	30	100
	Magnesium	110	ug/L	+/−300	U	P	110	300
	Manganese	2	ug/L	+/−10	U	P	2	10
	Potassium	50.5	ug/L	+/−150	J	P	50	150
	Silica	53	ug/L	+/−213	U	P	53	213
	Sodium	100	ug/L	+/−300	U	P	100	300
	Strontium	1	ug/L	+/−5	U	P	1	5
	Tin	2.5	ug/L	+/−10	U	P	2.5	10
	Vanadium	1	ug/L	+/−5	U	P	1	5
	Zinc	3.3	ug/L	+/−10	U	P	3.3	10
1203056170								
	Mercury	0.067	ug/L	+/−0.2	U	AV	0.067	0.2
1203056952								
	Mercury	0.067	ug/L	+/−0.2	U	AV	0.067	0.2

***Analytical Methods:**

P	**SW846 3005A/6010C**
MS	**SW846 3005A/6020A**

METALS
−3b−
PREPARATION BLANK SUMMARY

SDG NO. 2014−2960

Contract: ESHL00714

Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
AV	**EPA 245.1/245.2**							

METALS
−5a−

Matrix Spike Summary

SDG NO. 2014−2960 **Client ID** CACV−14−49264S

Contract: LANL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 344334006 **Spike ID:** 1203049000

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75−125	51.4		1	U	50	103		MS
Arsenic	ug/L	75−125	48		1.7	U	50	96		MS
Cadmium	ug/L	75−125	51.8		0.11	U	50	104		MS
Chromium	ug/L	75−125	53.1		2	U	50	105		MS
Lead	ug/L	75−125	51		0.5	U	50	102		MS
Molybdenum	ug/L	75−125	50.1		0.179	J	50	99.9		MS
Nickel	ug/L	75−125	53.9		0.5	U	50	107		MS
Selenium	ug/L	75−125	49		1.5	U	50	97.8		MS
Silver	ug/L	75−125	54.3		0.2	U	50	109		MS
Thallium	ug/L	75−125	34.6		0.45	U	50	69.3	N	MS
Uranium	ug/L	75−125	50.8		0.067	U	50	102		MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2014−2960 **Client ID** CAWA−14−54768S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 344383007 **Spike ID:** 1203050010

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Aluminum	ug/L	75−125	5000		68	U	5000	99.7		P
Barium	ug/L	75−125	500		10.3		500	97.9		P
Beryllium	ug/L	75−125	488		1	U	500	97.5		P
Boron	ug/L	75−125	466		15	U	500	91.1		P
Calcium	ug/L	75−125	15400		10900		5000	90.8		P
Cobalt	ug/L	75−125	476		1	U	500	95.2		P
Copper	ug/L	75−125	510		3	U	500	102		P
Iron	ug/L	75−125	5110		47.1	J	5000	101		P
Magnesium	ug/L	75−125	8340		3600		5000	94.8		P
Manganese	ug/L	75−125	484		2	U	500	96.7		P
Potassium	ug/L	75−125	6120		1210		5000	98.2		P
Silica	ug/L		62600		52700		10700	92.6	N/A	P
Sodium	ug/L	75−125	13900		8740		5000	102		P
Strontium	ug/L	75−125	584		67.6		500	103		P
Tin	ug/L	75−125	491		2.5	U	500	98.1		P
Vanadium	ug/L	75−125	512		3.2	J	500	102		P
Zinc	ug/L	75−125	484		15.6		500	93.6		P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2014−2960 **Client ID** CACV−14−49264S

Contract: LANL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 344334006 **Spike ID:** 1203056173

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	1.96		0.067	U	2	98.2		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−5a−

Spike Summary

SDG NO. 2014−2960 **Client ID** CACV−14−49264PS

Contract: LANL00114 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 344334006 **Spike ID:** 1203056730

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Thallium	ug/L	75−125	46.9		0.45	U	50	93.8		MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2014−2960 **Client ID** CAWA−14−54782S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 344332004 **Spike ID:** 1203056959

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	2.02		0.067	U	2	101		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

Metals
−6−
Duplicate Sample Summary

SDG No.: 2014−2960 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CACV−14−49264D

Matrix: WATER **Level:** Low

Sample ID: 344334006 **Duplicate ID:** 1203048999 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L		1	U	1	U			MS
Arsenic	ug/L		1.7	U	1.7	U			MS
Cadmium	ug/L		0.11	U	0.11	U			MS
Chromium	ug/L		2	U	2	U			MS
Lead	ug/L		0.5	U	0.5	U			MS
Molybdenum	ug/L		0.179	J	0.165	U	200		MS
Nickel	ug/L		0.5	U	0.5	U			MS
Selenium	ug/L		1.5	U	1.5	U			MS
Silver	ug/L		0.2	U	0.2	U			MS
Thallium	ug/L		0.45	U	0.45	U			MS
Uranium	ug/L		0.067	U	0.067	U			MS

***Analytical Methods:**

MS SW846 3005A/6020A

Metals
−6−
Duplicate Sample Summary

SDG No.: 2014−2960 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CAWA−14−54768D

Matrix: WATER **Level:** Low

Sample ID: 344383007 **Duplicate ID:** 1203050009 **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	10.3		8.34		21		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L		15	U	15	U			P
Calcium	ug/L	+/−20%	10900		10500		3.39		P
Cobalt	ug/L		1	U	1	U			P
Copper	ug/L		3	U	3	U			P
Iron	ug/L	+/−100	47.1	J	33.7	J	33.3		P
Magnesium	ug/L	+/−20%	3600		3540		1.86		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/−20%	1210		1210		.231		P
Silica	ug/L	+/−20%	52700		52000		1.25		P
Sodium	ug/L	+/−20%	8740		8490		2.95		P
Strontium	ug/L	+/−20%	67.6		65.7		2.74		P
Tin	ug/L		2.5	U	2.5	U			P
Vanadium	ug/L	+/−5	3.2	J	2.09	J	41.9		P
Zinc	ug/L	+/−10	15.6		14.5		6.9		P

***Analytical Methods:**

P SW846 3005A/6010C

Metals
−6−
Duplicate Sample Summary

SDG No.: 2014−2960 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CACV−14−49264D

Matrix: WATER **Level:** Low

Sample ID: 344334006 **Duplicate ID:** 1203056172 **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
−6−
Duplicate Sample Summary

SDG No.: 2014−2960 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CAWA−14−54782D

Matrix: WATER **Level:** Low

Sample ID: 344332004 **Duplicate ID:** 1203056957 **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. 2014−2960

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203048998								
	Antimony	ug/L	50	50.3		101	80−120	MS
	Arsenic	ug/L	50	47.1		94.3	80−120	MS
	Cadmium	ug/L	50	50.5		101	80−120	MS
	Chromium	ug/L	50	49.8		99.5	80−120	MS
	Lead	ug/L	50	49.2		98.4	80−120	MS
	Molybdenum	ug/L	50	48.8		97.7	80−120	MS
	Nickel	ug/L	50	50.6		101	80−120	MS
	Selenium	ug/L	50	49.2		98.3	80−120	MS
	Silver	ug/L	50	51.6		103	80−120	MS
	Thallium	ug/L	50	46.8		93.7	80−120	MS
	Uranium	ug/L	50	50.6		101	80−120	MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2014−2960

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203050008								
	Aluminum	ug/L	5000	5060		101	80−120	P
	Barium	ug/L	500	501		100	80−120	P
	Beryllium	ug/L	500	492		98.4	80−120	P
	Boron	ug/L	500	462		92.4	80−120	P
	Calcium	ug/L	5000	4760		95.3	80−120	P
	Cobalt	ug/L	500	486		97.2	80−120	P
	Copper	ug/L	500	501		100	80−120	P
	Iron	ug/L	5000	5320		106	80−120	P
	Magnesium	ug/L	5000	4970		99.3	80−120	P
	Manganese	ug/L	500	495		98.9	80−120	P
	Potassium	ug/L	5000	5390		108	80−120	P
	Silica	ug/L	10700	9940		92.9	80−120	P
	Sodium	ug/L	5000	5160		103	80−120	P
	Strontium	ug/L	500	521		104	80−120	P
	Tin	ug/L	500	501		100	80−120	P
	Vanadium	ug/L	500	515		103	80−120	P
	Zinc	ug/L	500	476		95.1	80−120	P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2014−2960

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203056171								
	Mercury	ug/L	2	2.01		101	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2014−2960

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203056953								
	Mercury	ug/L	2	2.04		102	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2014−2960 **Client ID** CACV−14−49264L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 344334006 **Serial Dilution ID:** 1203049001

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	2	U	10	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.179	J	.825	U	100			MS
Nickel	.5	U	2.5	U				MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	4.89	J				MS
Uranium	.067	U	.335	U				MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2014−2960 **Client ID** CAWA−14−54768L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 344383007 **Serial Dilution ID:** 1203050012

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	10.3		10.6	J	2.49			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	10900		10700		1.7		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	47.1	J	150	U	100			P
Magnesium	3600		3560		1.07			P
Manganese	2	U	10	U				P
Potassium	1210		1590		31.7			P
Silica	52700		51000		3.24		10	P
Sodium	8740		8650		1.05		10	P
Strontium	67.6		65.4		3.23		10	P
Tin	2.5	U	12.5	U				P
Vanadium	3.2	J	5	U	100			P
Zinc	15.6		18.5	J	18.6			P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2014−2960 **Client ID** CACV−14−49264L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 344334006 **Serial Dilution ID:** 1203056174

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**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2014−2960 **Client ID** CAWA−14−54782L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 344332004 **Serial Dilution ID:** 1203056958

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:
27-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ICP/MS	SW846 3005A/6020A	Liquid	ESHL, LANL
Batch ID:	**Sample Numbers:**		
1372024	See Below		

Potentially affected work order(s)(SDG): 344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344334(2014-2961)

Application Issues:

Failed Recovery for MS/PS

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/PS: QC 1203049000MS	The matrix spike recovery failed outside of the control limits for Tl. The post spike passed the required control limits for Tl. This verifies the absence of a matrix interference. 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 28-MAR-14

Data Validator/Group Leader:

Paul Boyd 28-MAR-14

General Chem Analysis

Case Narrative

General Chemistry Narrative
ARS International, LLC (ARSL)
SDG 2014-2960

Method/Analysis Information

Product: **Carbon and Total Organic**

Analytical Batch: 1373397 **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
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203052108	Method Blank (MB)
1203052109	344291004(CAWA-14-54733) Sample Duplicate (DUP)
1203052111	344291004(CAWA-14-54733) Post Spike (PS)
1203052113	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 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: 344291004 (CAWA-14-54733).

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 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. 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:	**Specific Conductivity**		
Analytical Batch:	1375626	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203057547	Laboratory Control Sample (LCS)
1203057549	344383007(CAWA-14-54768) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-009 REV# 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: 344383007 (CAWA-14-54768).

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: 1372322 **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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203049842	Laboratory Control Sample (LCS)
1203049844	343999007(CAWA-14-54759) 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 Thermo Orion Star A111. Immediates

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: 343999007 (CAWA-14-54759).

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 samples from this sample group were received by the lab outside of the method specified holding time: 344332007 (CAWA-14-54784) and 344332016 (CAWA-14-54785).

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: 1274447 344332007 (CAWA-14-54784) and 344332016 (CAWA-14-54785).

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product:	**Cyanide and Total**		
Analytical Batch:	1372104	**Method:**	WSP-CN(T)
Prep Batch :	1372103	**Method:**	EPA 335.4

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 335.4:

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203049220	Method Blank (MB)
1203049221	344291004(CAWA-14-54733) Sample Duplicate (DUP)
1203049223	344291004(CAWA-14-54733) Matrix Spike (MS)
1203049225	Laboratory Control Sample (LCS)
1203049933	344440001(MW Pond (Liquid) 031014-01) Matrix Spike Duplicate (MSD)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 17.

Preparation/Analytical Method Verification

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

Calibration Information

The Flow Injection analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

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

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

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

Quality Control (QC) Designation
The following samples were selected for QC analysis: 344291004 (CAWA-14-54733) and 344440001 (MW Pond (Liquid) 031014-01).

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

Matrix Spike Duplicate (MSD) Recovery Statement
The MSD recovery for this sample set was within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement
The RPD between the spike and spike duplicate met the acceptance limits.

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

Technical Information

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

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

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

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

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

Miscellaneous Information

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:	**Ion Chromatography**		
Analytical Batch:	1371922	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203048735	Method Blank (MB)
1203048736	344332016(CAWA-14-54785) Sample Duplicate (DUP)
1203048737	344332016(CAWA-14-54785) Post Spike (PS)
1203048738	Laboratory Control Sample (LCS)
1203052102	344674007(CAWA-14-54761) Sample Duplicate (DUP)
1203052103	344674007(CAWA-14-54761) Post Spike (PS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 22.

Preparation/Analytical Method Verification

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

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

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

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

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

Quality Control (QC) Designation
The following samples were selected for QC analysis: 344332016 (CAWA-14-54785) and 344674007 (CAWA-14-54761).

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 Dilutions
The following samples in this sample group were diluted due to high concentration: 1203052102 (CAWA-14-54761) and 1203052103 (CAWA-14-54761).

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.

Manual Integrations
The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1203048736 (CAWA-14-54785), 1203048737 (CAWA-14-54785), 1203052102 (CAWA-14-54761), 1203052103 (CAWA-14-54761), 344332007 (CAWA-14-54784) and 344332016 (CAWA-14-54785).

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:	1372119	**Method:**	EPA 350.1 Nitrogen and Ammonia L
Prep Batch :	1372118	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203049281	Method Blank (MB)
1203049282	Laboratory Control Sample (LCS)
1203049283	344383007(CAWA-14-54768) Sample Duplicate (DUP)
1203049284	344383007(CAWA-14-54768) Matrix Spike (MS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

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

Calibration Verification Information
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Continuing Calibration Blanks
All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)
All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule
The absolute value of the intercept is less than 3 times the MDL.

Quality Control (QC) Information

Method Blank (MB) Statement
The MB analyzed with this SDG met the acceptance criteria.

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

Quality Control (QC) Designation
The following sample was selected for QC analysis: 344383007 (CAWA-14-54768).

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 CCB failure. The reanalysis data with passing instrument QC was reported. 1203049281 (MB) and 1203049282 (LCS).

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 Kjeldahl Nitrogen**		
Analytical Batch:	1373249	**Method:**	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1373248	**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
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203051777	Method Blank (MB)
1203051778	Laboratory Control Sample (LCS)
1203051779	344674004(CAWA-14-54740) Sample Duplicate (DUP)
1203051780	344674004(CAWA-14-54740) Matrix Spike (MS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 14.

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

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: 344674004 (CAWA-14-54740).

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203051780 (CAWA-14-54740).

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. 1203051779 (CAWA-14-54740).

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 instrument failure. The results from the reanalysis are reported. 1203051779 (CAWA-14-54740). The following sample was accidentally reanalyzed. 1203051780 (CAWA-14-54740).

Miscellaneous Information

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1277969 1203051780 (CAWA-14-54740).

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:	1372110	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203049254	Method Blank (MB)
1203049256	344227007(CAWA-14-54753) Sample Duplicate (DUP)
1203049258	344227007(CAWA-14-54753) Post Spike (PS)
1203049259	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: 344227007 (CAWA-14-54753).

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 following samples in this sample group were diluted due to matrix interference: 1203049256 (CAWA-14-54753) and 1203049258 (CAWA-14-54753).

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:	1373244	**Method:**	EPA 365.4 Phosphorus and Total in
Prep Batch :	1373241	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203051760	Method Blank (MB)
1203051761	Laboratory Control Sample (LCS)
1203051762	344588007(CAAN-14-54790) Sample Duplicate (DUP)
1203051763	344588007(CAAN-14-54790) 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: 344588007 (CAAN-14-54790).

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. 1203051762 (CAAN-14-54790).

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. 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 and Total Dissolved**		
Analytical Batch:	1371765	**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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203048354	Method Blank (MB)
1203048355	344112007(CAAN-14-54791) Sample Duplicate (DUP)
1203048356	Laboratory Control Sample (LCS)
1203048572	344296020(CAWA-14-54707) 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# 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 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 samples were selected for QC analysis: 344112007 (CAAN-14-54791) and 344296020 (CAWA-14-54707).

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: 1372687 **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
344332007	CAWA-14-54784
344332016	CAWA-14-54785
1203050681	Method Blank (MB)
1203050682	Laboratory Control Sample (LCS)
1203051077	344112007(CAAN-14-54791) Sample Duplicate (DUP)
1203051078	344112007(CAAN-14-54791) 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# 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 Titration analysis was performed on a manually operated buret.

Initial Standardization
The titrant was properly standardized

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: 344112007 (CAAN-14-54791).

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:**_____07April14_____

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

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

B The target analyte was detected in the associated blank.

H Analytical holding time was exceeded

J Value is estimated

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

P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.

Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.

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: April 7, 2014

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

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

Client SDG: 2014-2960

Client Sample ID: CAWA-14-54782
Sample ID: 344332004
Matrix: W
Collect Date: 07-MAR-14 09:52
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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	0.557	0.330	1.00	mg/L	1	TSM	03/19/14	1801	1373397	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	03/17/14	1405	1372104	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	03/26/14	1437	1373249	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	03/17/14	1249	1372103
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	03/25/14	1700	1373248

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

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Report Date: April 7, 2014

Company : Los Alamos National Laboratory
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Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL-WQH Groundwater Samples

Client SDG: 2014-2960

Client Sample ID: CAWA-14-54784
Sample ID: 344332007
Matrix: W
Collect Date: 07-MAR-14 09:52
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		117	1.00	1.00	umhos/cm	1	LXA1	03/27/14	1512	1375626	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 17.9C	H	8.12	0.010	0.100	SU	1	LXA1	03/13/14	1501	1372322	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	DM	03/18/14	1746	1371922	3
Chloride		1.62	0.067	0.200	mg/L	1					
Fluoride		0.185	0.033	0.100	mg/L	1					
Sulfate		1.41	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	03/13/14	1310	1372119	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.392	0.017	0.050	mg/L	1	KLP1	03/13/14	1500	1372110	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.197	0.017	0.050	mg/L	1	KLP1	04/02/14	1242	1373244	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		136	3.40	14.3	mg/L		LYG1	03/11/14	1323	1371765	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		47.6	0.725	1.00	mg/L		LXA1	03/14/14	1330	1372687	8
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	03/13/14	1156	1372118
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	04/01/14	1700	1373241

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Report Date: April 7, 2014

Company :	Los Alamos National Laboratory		
Address :	TA-03, SM271, Drop Pt. 02U, Rm111		
	Los Alamos, New Mexico 87545		
Contact:	Mr. Keith Greene	Client SDG:	2014-2960
Project:	LANL-WQH Groundwater Samples		

Client Sample ID:	CAWA-14-54784	Project:	ESHL00714
Sample ID:	344332007	Client ID:	ARSL004

The following Analytical Methods were performed:

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

Notes:

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Certificate of Analysis

Report Date: April 7, 2014

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

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

Client SDG: 2014-2960

Client Sample ID: CAWA-14-54783
Sample ID: 344332013
Matrix: W
Collect Date: 07-MAR-14 12:08
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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	0.631	0.330	1.00	mg/L	1	TSM	03/19/14	1853	1373397	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	03/17/14	1406	1372104	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	03/26/14	1438	1373249	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	03/17/14	1249	1372103
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	03/25/14	1700	1373248

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

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Certificate of Analysis

Report Date: April 7, 2014

Company : Los Alamos National Laboratory
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Los Alamos, New Mexico 87545
Contact: Mr. Keith Greene
Project: LANL-WQH Groundwater Samples

Client SDG: 2014-2960

Client Sample ID: CAWA-14-54785
Sample ID: 344332016
Matrix: W
Collect Date: 07-MAR-14 12:08
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		103	1.00	1.00	umhos/cm	1	LXA1	03/27/14	1513	1375626	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 17.8C	H	7.56	0.010	0.100	SU	1	LXA1	03/13/14	1503	1372322	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	DM	03/18/14	1817	1371922	3
Chloride		1.34	0.067	0.200	mg/L	1					
Fluoride		0.149	0.033	0.100	mg/L	1					
Sulfate		1.96	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	03/13/14	1311	1372119	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.110	0.017	0.050	mg/L	1	KLP1	03/13/14	1501	1372110	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.150	0.017	0.050	mg/L	1	KLP1	04/02/14	1243	1373244	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		103	3.40	14.3	mg/L		LYG1	03/11/14	1323	1371765	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		125	0.725	1.00	mg/L		LXA1	03/14/14	1333	1372687	8
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	03/13/14	1156	1372118
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	04/01/14	1700	1373241

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Certificate of Analysis

Report Date: April 7, 2014

Company :	Los Alamos National Laboratory		
Address :	TA-03, SM271, Drop Pt. 02U, Rm111		
	Los Alamos, New Mexico 87545		
Contact:	Mr. Keith Greene	Client SDG:	2014-2960
Project:	LANL-WQH Groundwater Samples		

Client Sample ID:	CAWA-14-54785	Project:	ESHL00714
Sample ID:	344332016	Client ID:	ARSL004

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 120.1	
2	EPA 150.1	
3	EPA 300.0	
4	EPA 350.1	
5	EPA 353.2	
6	EPA 365.4	
7	EPA 160.1	
8	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: April 7, 2014

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

Contact: **Mr. Keith Greene**

Workorder: **344332**

Parmname	NOM		Sample	Qual	QC	Units	RPD%		REC%	Range	Anlst	Date Time
Carbon Analysis												
Batch 1373397												
QC1203052109 344291004 DUP												
Total Organic Carbon Average			1.34		1.45	mg/L	8.09	^		(+/-1.00)	TSM	03/19/14 15:18
QC1203052113 LCS												
Total Organic Carbon Average	10.0				9.90	mg/L			99	(85%-115%)		03/19/14 14:36
QC1203052108 MB												
Total Organic Carbon Average				U	ND	mg/L						03/19/14 14:27
QC1203052111 344291004 PS												
Total Organic Carbon Average	10.0		1.34		11.5	mg/L			102	(65%-120%)		03/19/14 15:38
Conductivity Analysis												
Batch 1375626												
QC1203057549 344383007 DUP												
Conductivity			127		127	umhos/cm	0.236			(0%-10%)	LXA1	03/27/14 15:17
QC1203057547 LCS												
Conductivity	1410				1390	umhos/cm			98.5	(95%-105%)		03/27/14 15:04
Electrode Analysis												
Batch 1372322												
QC1203049844 343999007 DUP												
pH		H	7.85	H	7.83	SU	0.255			(0%-10%)	LXA1	03/13/14 14:21
QC1203049842 LCS												
pH	7.00				7.02	SU			100	(99%-101%)		03/13/14 14:09
Flow Injection Analysis												
Batch 1372104												
QC1203049221 344291004 DUP												
Cyanide, Total		U	ND	U	ND	ug/L	N/A				AXH3	03/17/14 13:53
QC1203049225 LCS												
Cyanide, Total	50.0				49.2	ug/L			98.4	(90%-110%)		03/17/14 13:47
QC1203049220 MB												
Cyanide, Total				U	ND	ug/L						03/17/14 13:46
QC1203049223 344291004 MS												
Cyanide, Total	100	U	ND		100	ug/L			100	(90%-110%)		03/17/14 13:54
QC1203049933 344440001 MSD												

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QC Summary

Workorder: **344332**

Parmname	NOM		Sample	Qual	QC	Units	RPD%		REC%	Range	Anlst	Date Time
Flow Injection Analysis												
Batch 1372104												
Cyanide, Total	100	U	ND		104	ug/L	1.94		104	(0%-21%)		03/17/14 14:12
Ion Chromatography												
Batch 1371922												
QC1203048736 344332016 DUP												
Bromide		U	ND	U	ND	mg/L	N/A				DM	03/18/14 18:48
Chloride			1.34		1.35	mg/L	0.417			(0%-20%)		
Fluoride			0.149		0.151	mg/L	1.40	^		(+/-0.100)		
Sulfate			1.96		1.92	mg/L	2.06	^		(+/-0.400)		
QC1203052102 344674007 DUP												
Bromide		U	ND	U	ND	mg/L	N/A					03/18/14 23:57
Chloride			18.7		18.6	mg/L	0.557			(0%-20%)		03/20/14 02:36
Fluoride			0.171		0.166	mg/L	3.32	^		(+/-0.100)		03/18/14 23:57
Sulfate			6.44		6.47	mg/L	0.480			(0%-20%)		
QC1203048738 LCS												
Bromide	1.25				1.33	mg/L			107	(90%-110%)		03/18/14 14:40
Chloride	5.00				4.84	mg/L			96.8	(90%-110%)		
Fluoride	2.50				2.49	mg/L			99.5	(90%-110%)		
Sulfate	10.0				9.98	mg/L			99.8	(90%-110%)		
QC1203048735 MB												
Bromide				U	ND	mg/L						03/18/14 14:09
Chloride				U	ND	mg/L						
Fluoride				U	ND	mg/L						
Sulfate				U	ND	mg/L						
QC1203048737 344332016 PS												
Bromide	1.25	U	ND		1.31	mg/L			105	(90%-110%)		03/18/14 20:20
Chloride	5.00		1.34		6.37	mg/L			101	(90%-110%)		

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QC Summary

Workorder: **344332**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1371922											
Fluoride	2.50		0.149		2.61	mg/L		98.4	(90%-110%)		
Sulfate	10.0		1.96		12.0	mg/L		101	(90%-110%)	DM	03/18/14 20:20
QC1203052103 344674007 PS											
Bromide	1.25	U	ND		1.36	mg/L		103	(90%-110%)		03/19/14 00:28
Chloride	5.00		3.75		9.06	mg/L		106	(90%-110%)		03/20/14 03:07
Fluoride	2.50		0.171		2.62	mg/L		98.1	(90%-110%)		03/19/14 00:28
Sulfate	10.0		6.44		16.9	mg/L		105	(90%-110%)		
Nutrient Analysis											
Batch 1372110											
QC1203049256 344227007 DUP											
Nitrogen, Nitrate/Nitrite			0.855		0.825	mg/L	3.57 ^		(+/-0.250)	KLP1	03/13/14 14:52
QC1203049259 LCS											
Nitrogen, Nitrate/Nitrite	1.00				1.05	mg/L		105	(90%-110%)		03/13/14 14:36
QC1203049254 MB											
Nitrogen, Nitrate/Nitrite				U	ND	mg/L					03/13/14 14:35
QC1203049258 344227007 PS											
Nitrogen, Nitrate/Nitrite	1.00		0.171		1.21	mg/L		104	(90%-110%)		03/13/14 14:53
Batch 1372119											
QC1203049283 344383007 DUP											
Nitrogen, Ammonia			0.0537		0.0655	mg/L	19.8 ^		(+/-0.050)	KLP1	03/13/14 13:21
QC1203049282 LCS											
Nitrogen, Ammonia	1.00				0.949	mg/L		94.9	(90%-110%)		03/13/14 13:02
QC1203049281 MB											
Nitrogen, Ammonia				U	ND	mg/L					03/13/14 13:01
QC1203049284 344383007 MS											
Nitrogen, Ammonia	1.00		0.0537		1.02	mg/L		96.6	(90%-110%)		03/13/14 13:22
Batch 1373244											
QC1203051762 344588007 DUP											
Phosphorus, Total as P			0.0574	J	0.0361	mg/L	45.6 ^		(+/-0.050)	KLP1	04/02/14 13:01
QC1203051761 LCS											
Phosphorus, Total as P	1.00				1.08	mg/L		108	(79%-126%)		04/02/14 12:37

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Nutrient Analysis										
Batch 1373244										
QC1203051760 MB										
Phosphorus, Total as P			U	ND	mg/L				KLP1	04/02/14 12:36
QC1203051763 344588007 MS										
Phosphorus, Total as P	1.00	0.0574		1.01	mg/L		95.3	(64%-134%)		04/02/14 13:02
Batch 1373249										
QC1203051779 344674004 DUP										
Nitrogen, Total Kjeldahl		0.340		0.274	mg/L	21.5 ^		(+/-0.100)	KLP1	03/26/14 15:16
QC1203051778 LCS										
Nitrogen, Total Kjeldahl	1.00			1.08	mg/L		108	(90%-110%)		03/26/14 14:31
QC1203051777 MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					03/26/14 14:30
QC1203051780 344674004 MS										
Nitrogen, Total Kjeldahl	1.00	0.340		1.12	mg/L		78 *	(90%-110%)		03/26/14 15:13
Solids Analysis										
Batch 1371765										
QC1203048355 344112007 DUP										
Total Dissolved Solids		119		119	mg/L	0.00		(0%-10%)	LYG1	03/11/14 08:49
QC1203048572 344296020 DUP										
Total Dissolved Solids		119		120	mg/L	1.20		(0%-10%)		03/11/14 13:23
QC1203048356 LCS										
Total Dissolved Solids	300			287	mg/L		95.7	(95%-105%)		03/11/14 08:49
QC1203048354 MB										
Total Dissolved Solids			U	ND	mg/L					03/11/14 08:49
Titration Analysis										
Batch 1372687										
QC1203051077 344112007 DUP										
Alkalinity, Total as CaCO3		54.3		53.8	mg/L	0.957		(0%-20%)	LXA1	03/14/14 11:43
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A				
QC1203050682 LCS										
Alkalinity, Total as CaCO3	50.0			50.7	mg/L		101	(90%-110%)		03/14/14 11:09
QC1203050681 MB										
Alkalinity, Total as CaCO3			U	ND	mg/L					03/14/14 10:57

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Titration Analysis										
Batch 1372687										
Carbonate alkalinity (CaCO3)			U	ND	mg/L				LXA1	03/14/14 10:57
QC1203051078 344112007 MS										
Alkalinity, Total as CaCO3	50.0	54.3		105	mg/L		100	(80%-120%)		03/14/14 11:52

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
e	5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes
h	Preparation or preservation holding time was exceeded

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
^ 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:
13-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	EPA 150.1, SW846 9040C	Liquid	CARE, ESHL, FBWP, SCEG,
Batch ID:	**Sample Numbers:**		
1372322	See Below		

Potentially affected work order(s)(SDG): **343999(2014-2932),344000(2014-2933),344061(2014-2938),344063(2014-2936),344112(2014-2944),344170(2014-2954),344227(2014-2943),344290,344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344335,344379,344440(EUI-9553)**

Application Issues:

Sample received out of holding

Specification and Requirements Exception Description:	DER Disposition:
1. Sample received out of holding: 343999 007 344000 007,011 344061 007 344063 007 344112 007 344170 001 344227 007 344290 002 344291 007,016 344293 007 344296 007,020 344332 007,016 344335 004 344379 006,012 344440 001	1.The following samples from this sample group were received by the lab outside of the method specified holding time.

Originator's Name:

Lindsey Jensen 13-MAR-14

Data Validator/Group Leader:

Elzbieta Szulc 13-MAR-14

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
26-MAR-14	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 351.2	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1373249	See Below		

Potentially affected work order(s)(SDG): **344227(2014-2943),344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344383(2014-2971),344384(2014-2970),344473(2014-2974),344588(2014-2989),344674(2014-2999)**

Application Issues:

Failed Recovery for MS/PS

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS: QC 1203051780MS	1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.

Originator's Name:

Kristen Parson 26-MAR-14

Data Validator/Group Leader:

Elzbieta Szulc 01-APR-14

Radiological Analysis

Radiochemistry Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2960
Work Order 344332

Method/Analysis Information

Product:	**Alphaspec Am241 Liquid**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number:	1371824

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203048493	Method Blank (MB)
1203048494	344296004(CAWA-14-54741) Sample Duplicate (DUP)
1203048495	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 1203048493 (MB) and 1203048495 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 344296004 (CAWA-14-54741). The QC was from ARSL work order 344296.

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.

Recounts
None of the samples in this batch were recounted.

Miscellaneous Information:

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

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

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The MDCs (and Lc if requested) 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:	1371825

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203048496	Method Blank (MB)

1203048497 344296004(CAWA-14-54741) Sample Duplicate (DUP)
1203048498 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 1203048496 (MB) and 1203048498 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 344296004 (CAWA-14-54741). The QC was from ARSL work order 344296.

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
None of the samples in this sample set required reprep or reanalysis.

Recounts
None of the samples in this batch were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1275189 was generated

due to RDL less than MDA. 1. Samples 344291004, 344291013, 344293004, 344296004, 344296017, 344332004, 344332013, 1203048496, and 1203048497 do not meet the detection limits for Pu-239/240 due to the high standard deviation. 1. When a blank population is performed, the MDC is greater than the RDL due to the high standard deviation. The samples were counted for the maximum count time of 1000 minutes in order to achieve the best possible MDC's and over 400 Pu-242 tracer counts were achieved. Reporting results.

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

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The MDCs (and Lc if requested) 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:	1371826

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203048499	Method Blank (MB)
1203048500	344296004(CAWA-14-54741) Sample Duplicate (DUP)
1203048501	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 1203048499 (MB) and 1203048501 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 344296004 (CAWA-14-54741). The QC was from ARSL work order 344296.

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.

Recounts
None of the samples in this batch were recounted.

Miscellaneous Information:

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

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

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The MDCs (and Lc if requested) 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:	**Gammaspec**
Analytical Method:	EPA 901.1
Analytical Batch Number:	1372049

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203049049	Method Blank (MB)
1203049050	344332004(CAWA-14-54782) Sample Duplicate (DUP)
1203049051	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 May 2013, June 2013, July 2013 and August 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
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 344332004 (CAWA-14-54782). The QC was from ARSL work order 344332.

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.

Recounts
None of the samples in this batch were recounted.

Miscellaneous Information:

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

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

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

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:	1374041

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203053724	Method Blank (MB)
1203053725	344063004(CAPA-14-54777) Sample Duplicate (DUP)
1203053726	344063004(CAPA-14-54777) Matrix Spike (MS)
1203053727	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# 17.

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 1203053724 (MB) and 1203053727 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 344063004 (CAPA-14-54777). The QC was from ARSL work order 344063.

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

CSU
The blank 1203053724 (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
None of the samples in this sample set required reprep or reanalysis.

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

Recounts
Sample 344332013 (CAWA-14-54783) was recounted due to results more negative than the three sigma TPU. The recount is 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 1279539 was generated due to Failed Yield for Surrogates. 1. Samples 344291013, 344296017, 344332004, and 344473004 do not meet the client carrier yield requirement. 1. Reporting results.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The matrix spike, 1203053726 (CAPA-14-54777), aliquot was 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:	**WSP-GrossA/B**
Analytical Method:	EPA 900.0/SW846 9310
Analytical Batch Number:	1374043

Sample ID	Client ID
344332004	CAWA-14-54782
344332013	CAWA-14-54783
1203053744	Method Blank (MB)
1203053745	344296017(CAWA-14-54704) Sample Duplicate (DUP)
1203053746	344296017(CAWA-14-54704) Matrix Spike (MS)
1203053747	344296017(CAWA-14-54704) Matrix Spike Duplicate (MSD)
1203053748	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 October 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 1203053744 (MB) and 1203053748 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 344296017 (CAWA-14-54704). The QC was from ARSL work order 344296.

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.

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.

Recounts
Sample 1203053748 (LCS) was recounted due to high recovery. The recount is 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. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
The matrix spike and matrix spike duplicate, 1203053746 (CAWA-14-54704) and 1203053747 (CAWA-14-54704), 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.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2014-2960 GEL Work Order: 344332

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:  **Name: Kate Gellatly**

Date: 04 APR 2014 **Title: Analyst I**

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
17-MAR-14	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:**		
1371825	See Below		

Potentially affected work order(s)(SDG): 344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960)

Application Issues:

RDL less than MDA

Specification and Requirements Exception Description:	DER Disposition:
1. Samples 344291004, 344291013, 344293004, 344296004, 344296017, 344332004, 344332013, 1203048496, and 1203048497 do not meet the detection limits for Pu-239/240 due to the high standard deviation.	1. When a blank population is performed, the MDC is greater than the RDL due to the high standard deviation. The samples were counted for the maximum count time of 1000 minutes in order to achieve the best possible MDC's and over 400 Pu-242 tracer counts were achieved. Reporting results.

Originator's Name:

Jessica Downey 17-MAR-14

Data Validator/Group Leader:

Kate Gellatly 20-MAR-14

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
01-APR-14	Radiochemistry	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GFPC	EPA 905.0 Modified	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1374041	See Below		

Potentially affected work order(s)(SDG): 344291(2014-2957),344296(2014-2959),344332(2014-2960),344473(2014-2974)

Application Issues:

Failed Yield for Surrogates

Specification and Requirements Exception Description:	DER Disposition:
1. Samples 344291013, 344296017, 344332004, and 344473004 do not meet the client carrier yield requirement.	1. Reporting results.

Originator's Name:

Nat Long 01-APR-14

Data Validator/Group Leader:

Maryann Alforque 01-APR-14

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545 Report Date: April 2, 2014

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

Client Sample ID: CAWA-14-54782
Sample ID: 344332004
Matrix: W
Collect Date: 07-MAR-14
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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	0.00	+/-0.00643	0.0526	0.0227	+/-0.00643	0.050	pCi/L		MXS2	03/13/14	1352	1371824	1
Alphaspec Pu, Liquid "As Received"														
Plutonium-238	U	-0.00601	+/-0.00601	0.0387	0.0153	+/-0.00601	0.050	pCi/L		MXS2	03/13/14	1353	1371825	2
Plutonium-239/240	U	-0.00601	+/-0.0085	0.0882	0.040	+/-0.0085	0.050	pCi/L						
Alphaspec U, Liquid "As Received"														
Uranium-234		0.301	+/-0.0302	0.0438	0.0183	+/-0.0359	1.00	pCi/L		MXS2	03/13/14	1352	1371826	3
Uranium-235/236	U	-0.00654	+/-0.0103	0.0418	0.0165	+/-0.0103	1.00	pCi/L						
Uranium-238		0.182	+/-0.0244	0.0409	0.0169	+/-0.0271	0.500	pCi/L						
Rad Gamma Spec Analysis														
Gammaspec "As Received"														
Cesium-137	U	0.266	+/-1.66	5.08	2.30	+/-1.66	8.00	pCi/L		RXF2	03/14/14	0947	1372049	4
Cobalt-60	U	0.699	+/-1.26	5.04	2.17	+/-1.27	8.00	pCi/L						
Neptunium-237	U	-2.66	+/-2.84	9.51	4.42	+/-2.91	10.0	pCi/L						
Potassium-40	U	-26.8	+/-14.5	53.7	23.4	+/-15.8	10.0	pCi/L						
Sodium-22	U	-0.295	+/-1.41	5.22	2.27	+/-1.41	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
GFPC, Sr90, liquid "As Received"														
Strontium-90	U	-0.175	+/-0.126	0.485	0.222	+/-0.126	0.500	pCi/L		KSD1	03/28/14	1156	1374041	5
WSP-GrossA/B "As Received"														
Beta	U	-1.04	+/-0.553	1.90	0.930	+/-0.553	3.00	pCi/L		DXG3	03/28/14	1624	1374043	6
Alpha	U	-0.949	+/-0.521	2.51	1.05	+/-0.521	3.00	pCi/L		DXG3	03/31/14	1148	1374043	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"	1371824	92.1	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1371825	72.5	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1371826	82.3	(50%-105%)

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545 Report Date: April 2, 2014

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

Client Sample ID: CAWA-14-54782 Project: ESHL00714
Sample ID: 344332004 Client ID: ARSL004

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"	1374041	45.1	*	(50%-105%)

Notes:

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

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: April 2, 2014

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

Client Sample ID: CAWA-14-54783
Sample ID: 344332013
Matrix: W
Collect Date: 07-MAR-14
Receive Date: 11-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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	-0.00248	+/-0.00656	0.0496	0.0214	+/-0.00656	0.050	pCi/L		MXS2	03/13/14	1352	1371824	1
Alphaspec Pu, Liquid "As Received"														
Plutonium-238	U	-0.00565	+/-0.00692	0.0364	0.0144	+/-0.00693	0.050	pCi/L		MXS2	03/13/14	1353	1371825	2
Plutonium-239/240	U	0.00848	+/-0.0185	0.083	0.0377	+/-0.0185	0.050	pCi/L						
Alphaspec U, Liquid "As Received"														
Uranium-234		0.214	+/-0.0262	0.048	0.0201	+/-0.0297	1.00	pCi/L		MXS2	03/13/14	1352	1371826	3
Uranium-235/236	U	0.0179	+/-0.0107	0.0458	0.0181	+/-0.0108	1.00	pCi/L						
Uranium-238		0.104	+/-0.0183	0.0449	0.0185	+/-0.0195	0.500	pCi/L						
Rad Gamma Spec Analysis														
Gammaspec "As Received"														
Cesium-137	U	-2.87	+/-1.77	5.42	2.44	+/-1.89	8.00	pCi/L		RXF2	03/14/14	0948	1372049	4
Cobalt-60	U	-1.36	+/-1.42	5.08	2.15	+/-1.45	8.00	pCi/L						
Neptunium-237	U	-6.1	+/-3.04	10.1	4.67	+/-3.36	10.0	pCi/L						
Potassium-40	U	50.0	+/-23.2	55.6	23.9	+/-23.3	10.0	pCi/L						
Sodium-22	U	0.297	+/-1.62	6.05	2.65	+/-1.62	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
GFPC, Sr90, liquid "As Received"														
Strontium-90	U	-0.252	+/-0.0884	0.438	0.188	+/-0.0884	0.500	pCi/L		KSD1	03/31/14	1117	1374041	5
WSP-GrossA/B "As Received"														
Beta	U	0.633	+/-0.360	1.16	0.560	+/-0.370	3.00	pCi/L		DXG3	03/28/14	1624	1374043	6
Alpha	U	-0.658	+/-0.643	2.90	1.19	+/-0.643	3.00	pCi/L		DXG3	03/31/14	1201	1374043	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"	1371824	89.6	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1371825	79.0	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1371826	74.7	(50%-105%)
Strontium Carrier	GFPC, Sr90, liquid "As Received"	1374041	72.0	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: April 2, 2014

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

Client Sample ID: CAWA-14-54783
Sample ID: 344332013

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: April 2, 2014

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

Los Alamos, New Mexico

Contact: **Mr. Keith Greene**

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1371824										
QC1203048494 344296004 DUP										
Americium-241	U	0.00	U	0.00517	pCi/L	0.253		(0-1)	MXS2	03/13/1413:52
	Uncert:	+/-0.00504		+/-0.00517						
	TPU:	+/-0.00504		+/-0.00517						
**Americium-243 Tracer	2.67	2.42		2.25	pCi/L		84.2	(50%-105%)		
	Uncert:	+/-0.0815		+/-0.0827						
	TPU:	+/-0.139		+/-0.141						
QC1203048495 LCS										
Americium-241	1.41			1.40	pCi/L		99	(80%-120%)	MXS2	03/13/1413:52
	Uncert:			+/-0.0526						
	TPU:			+/-0.079						
**Americium-243 Tracer	2.13			1.98	pCi/L		92.6	(50%-105%)		
	Uncert:			+/-0.0647						
	TPU:			+/-0.111						
QC1203048493 MB										
Americium-241			U	0.00	pCi/L				MXS2	03/13/1413:52
	Uncert:			+/-0.00377						
	TPU:			+/-0.00377						
**Americium-243 Tracer	2.13			2.02	pCi/L		94.7	(50%-105%)		
	Uncert:			+/-0.0631						
	TPU:			+/-0.109						
Batch 1371825										
QC1203048497 344296004 DUP										
Plutonium-238	U	-0.00277	U	-0.00386	pCi/L	0.0421		(0-1)	MXS2	03/13/1413:53
	Uncert:	+/-0.0062		+/-0.00668						
	TPU:	+/-0.0062		+/-0.00668						
Plutonium-239/240	U	-0.00277	U	0.00771	pCi/L	0.205		(0-1)		
	Uncert:	+/-0.00919		+/-0.0164						
	TPU:	+/-0.00919		+/-0.0164						
**Plutonium-242 Tracer	2.43	1.92		1.39	pCi/L		57.4	(50%-105%)		
	Uncert:	+/-0.0825		+/-0.0971						
	TPU:	+/-0.135		+/-0.153						
QC1203048498 LCS										
Plutonium-238			U	0.0105	pCi/L			(80%-120%)	MXS2	03/13/1413:53
	Uncert:			+/-0.00555						
	TPU:			+/-0.00557						
Plutonium-239/240	1.97			1.95	pCi/L		98.8	(80%-120%)		
	Uncert:			+/-0.0642						
	TPU:			+/-0.106						
**Plutonium-242 Tracer	1.94			1.62	pCi/L		83.5	(50%-105%)		
	Uncert:			+/-0.064						
	TPU:			+/-0.106						

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1371825										
QC1203048496 MB										
Plutonium-238			U	-0.00216	pCi/L				MXS2	03/13/1413:53
	Uncert:			+/-0.00375						
	TPU:			+/-0.00375						
Plutonium-239/240			U	0.00649	pCi/L					
	Uncert:			+/-0.00649						
	TPU:			+/-0.0065						
**Plutonium-242 Tracer	1.94			1.62	pCi/L		83.5	(50%-105%)		
	Uncert:			+/-0.065						
	TPU:			+/-0.107						
Batch 1371826										
QC1203048500 344296004 DUP										
Uranium-234		0.279		0.288	pCi/L	0.0632		(0-1)	MXS2	03/13/1413:52
	Uncert:	+/-0.0286		+/-0.0291						
	TPU:	+/-0.0338		+/-0.0346						
Uranium-235/236	U	0.0168	U	0.0279	pCi/L	0.250		(0-1)		
	Uncert:	+/-0.0101		+/-0.0121						
	TPU:	+/-0.0101		+/-0.0122						
Uranium-238		0.152		0.186	pCi/L	0.342		(0-1)		
	Uncert:	+/-0.0214		+/-0.024						
	TPU:	+/-0.0235		+/-0.0269						
**Uranium-232 Tracer	2.75	2.22		2.13	pCi/L		77.3	(50%-105%)		
	Uncert:	+/-0.0866		+/-0.089						
	TPU:	+/-0.198		+/-0.200						
QC1203048501 LCS										
Uranium-234				2.59	pCi/L				MXS2	03/13/1413:52
	Uncert:			+/-0.0696						
	TPU:			+/-0.179						
Uranium-235/236				0.149	pCi/L					
	Uncert:			+/-0.0191						
	TPU:			+/-0.0213						
Uranium-238	2.70			2.73	pCi/L		101	(80%-120%)		
	Uncert:			+/-0.0716						
	TPU:			+/-0.188						
**Uranium-232 Tracer	2.20			2.04	pCi/L		92.9	(50%-105%)		
	Uncert:			+/-0.0643						
	TPU:			+/-0.154						
QC1203048499 MB										
Uranium-234			U	0.00374	pCi/L				MXS2	03/13/1413:52
	Uncert:			+/-0.00529						
	TPU:			+/-0.00529						
Uranium-235/236			U	0.00693	pCi/L					
	Uncert:			+/-0.00517						
	TPU:			+/-0.00519						
Uranium-238			U	0.00561	pCi/L					
	Uncert:			+/-0.00418						
	TPU:			+/-0.0042						

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1371826										
**Uranium-232 Tracer	2.20			2.08	pCi/L		94.7	(50%-105%)		
	Uncert:			+/-0.0645						
	TPU:			+/-0.154						
Rad Gamma Spec										
Batch 1372049										
QC1203049050 344332004 DUP										
Cesium-137	U	0.266	U	-1.42	pCi/L	0.256		(0-1)	RXF2	03/14/1412:12
	Uncert:	+/-1.66		+/-1.61						
	TPU:	+/-1.66		+/-1.64						
Cobalt-60	U	0.699	U	-1.58	pCi/L	0.409		(0-1)		
	Uncert:	+/-1.26		+/-1.46						
	TPU:	+/-1.27		+/-1.51						
Neptunium-237	U	-2.66	U	6.22	pCi/L	0.611		(0-1)		
	Uncert:	+/-2.84		+/-4.10						
	TPU:	+/-2.91		+/-4.35						
Potassium-40	U	-26.8	U	-33.3	pCi/L	0.0797		(0-1)		
	Uncert:	+/-14.5		+/-23.4						
	TPU:	+/-15.8		+/-24.6						
Sodium-22	U	-0.295	U	-1.23	pCi/L	0.159		(0-1)		
	Uncert:	+/-1.41		+/-1.51						
	TPU:	+/-1.41		+/-1.54						
QC1203049051 LCS										
Americium-241	34500			35600	pCi/L		103	(80%-120%)	RXF2	03/14/1409:51
	Uncert:			+/-507						
	TPU:			+/-2350						
Cesium-137	14100			14100	pCi/L		99.8	(80%-120%)		
	Uncert:			+/-88.9						
	TPU:			+/-627						
Cobalt-60	18200			18600	pCi/L		102	(80%-120%)		
	Uncert:			+/-109						
	TPU:			+/-756						
Neptunium-237			U	59.9	pCi/L					
	Uncert:			+/-41.5						
	TPU:			+/-43.9						
Potassium-40			U	146	pCi/L					
	Uncert:			+/-89.4						
	TPU:			+/-95.7						
Sodium-22			U	-2.1	pCi/L					
	Uncert:			+/-13.3						
	TPU:			+/-13.3						
QC1203049049 MB										
Cesium-137			U	0.289	pCi/L				RXF2	03/14/1409:51
	Uncert:			+/-1.40						
	TPU:			+/-1.40						
Cobalt-60			U	-0.448	pCi/L					
	Uncert:			+/-1.35						

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 1372049										
	TPU:			+/-1.35						
Neptunium-237			U	-2.97	pCi/L					
	Uncert:			+/-2.31						
	TPU:			+/-2.41						
Potassium-40			U	-24.1	pCi/L					
	Uncert:			+/-14.6						
	TPU:			+/-15.7						
Sodium-22			U	-0.877	pCi/L					
	Uncert:			+/-1.02						
	TPU:			+/-1.04						
Rad Gas Flow										
Batch 1374041										
QC1203053725 344063004 DUP										
Strontium-90	U	-0.30	U	0.0798	pCi/L	0.896		(0-1)	KSD1	03/28/1415:04
	Uncert:	+/-0.123		+/-0.0888						
	TPU:	+/-0.123		+/-0.089						
**Strontium Carrier	8.20	7.20		7.30	mg		89	(50%-105%)		
QC1203053727 LCS										
Strontium-90	22.7			26.1	pCi/L		115	(80%-120%)	KSD1	03/28/1408:52
	Uncert:			+/-0.693						
	TPU:			+/-2.21						
**Strontium Carrier	8.20			7.30	mg		89	(50%-105%)		
QC1203053724 MB										
Strontium-90			U	0.096	pCi/L				KSD1	03/28/1415:04
	Uncert:			+/-0.0463						
	TPU:			+/-0.0469						
**Strontium Carrier	8.20			6.80	mg		82.9	(50%-105%)		
QC1203053726 344063004 MS										
Strontium-90	182 U	-0.30		200	pCi/L		110	(75%-125%)	KSD1	03/28/1408:52
	Uncert:	+/-0.123		+/-5.46						
	TPU:	+/-0.123		+/-17.3						
**Strontium Carrier	8.20	7.20		6.60	mg		80.5	(50%-105%)		
Batch 1374043										
QC1203053745 344296017 DUP										
Alpha	U	-0.474	U	-0.338	pCi/L	0.0659		(0-1)	DXG3	03/31/1411:49
	Uncert:	+/-0.373		+/-0.653						
	TPU:	+/-0.374		+/-0.653						
Beta	U	-0.0466	U	1.18	pCi/L	0.763		(0-1)		03/28/1417:51
	Uncert:	+/-0.309		+/-0.486						
	TPU:	+/-0.310		+/-0.497						
QC1203053748 LCS										
Alpha	12.3			12.9	pCi/L		104	(80%-120%)	DXG3	03/31/1415:35
	Uncert:			+/-0.655						
	TPU:			+/-1.39						
Beta	45.5			52.1	pCi/L		115	(80%-120%)		03/28/1416:27

QC Summary

Workorder: **344332**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1374043										
	Uncert:			+/-0.939						
	TPU:			+/-4.41						
QC1203053744 MB										
Alpha			U	-0.165	pCi/L				DXG3	03/31/1411:48
	Uncert:			+/-0.0458						
	TPU:			+/-0.0458						
Beta			U	0.00391	pCi/L					03/28/1416:25
	Uncert:			+/-0.0514						
	TPU:			+/-0.0514						
QC1203053746 344296017 MS										
Alpha	494	U	-0.474	581	pCi/L		118	(75%-125%)	DXG3	03/31/1412:03
	Uncert:		+/-0.373	+/-28.2						
	TPU:		+/-0.374	+/-56.0						
Beta	1820	U	-0.0466	2080	pCi/L		114	(75%-125%)		03/28/1416:27
	Uncert:		+/-0.309	+/-37.6						
	TPU:		+/-0.310	+/-177						
QC1203053747 344296017 MSD										
Alpha	494	U	-0.474	528	pCi/L	0.244	107	(0-1)	DXG3	03/31/1412:03
	Uncert:		+/-0.373	+/-26.9						
	TPU:		+/-0.374	+/-52.1						
Beta	1820	U	-0.0466	2180	pCi/L	0.134	120	(0-1)		03/28/1416:27
	Uncert:		+/-0.309	+/-38.5						
	TPU:		+/-0.310	+/-185						

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.

QC Summary

Workorder: **344332**

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

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.
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.