

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

Chain of Custody/Analysis Request

ADEP

COC/Lab Request #:

2014-3518

Page 1 of 1

Client Contact:

Lab Agreement # : 126310011

Site Name: Los Alamos National Laboratory

Project Number :

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Day - ☐

14 Day - ☐

21 Day - ☐

28 Day - ☒

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-8310-PAH

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

CALA-14-79456

Jun 6 2014

9:55

W

1

2

2

1

1

2

2

2

1

1

1

CALA-14-79462

Jun 6 2014

9:55

W

1

1

1

CALA-14-79449

Jun 6 2014

9:55

W

2

2

1

Special Instructions:

Relinquished by:

Relinquished by:

Relinquished by:

Print Name:

Print Name:

Print Name:

Date/Time:

Date/Time:

Date/Time:

Received by:

Received by:

Received by:

Print Name:

Print Name:

Print Name:

Date/Time:

Date/Time:

Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5702 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Los Alamos

SAMPLE ID: CALA-14-79449 WORK ORDER:

	<u>AS</u> <u>PLANNED</u>	<u>AS COLLECTED</u>		<u>AS</u> <u>PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		6/6/14	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		955	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	DC
LOCATION ID: LAO-3a		↓	FIELD PREP:	UF	ok
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_DBCF	40 ML SEPTUM AMBER GLASS	2	Na2S2O3 HCL	y	NA
NA	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Flow (in gpm) NA GPM Oxidation-Reduction Potential NA mV
 pH NA SU Specific Conductance NA uS/cm Temperature NA deg C
 Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw / D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>[Signature]</i>	Date/Time 6/6/14 1115	RECEIVED BY (Printed Name) K. Greene (Signature) <i>[Signature]</i>	Date/Time 6/6/14 1115
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5702 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Los Alamos
 SAMPLE ID: CALA-14-79456 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		6/6/14	FIELD MATRIX:	WG	o/c
TIME COLLECTED (HH:MM):		955	MEDIA:	UA	↓
PRS ID:		o/c	SAMPLE TECH CODE:	UA	BP
LOCATION ID: LAO-3a		↓	FIELD PREP:	UF	o/c
LOCATION TYPE: OBS		↓	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	Na2S2O3		
	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE		
	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		
	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE		
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5702 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Los Alamos
SAMPLE ID: CALA-14-79456 WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 7.70 mg/L Flow (in gpm) 0.13 GPM Oxidation-Reduction Potential 106.2 mV
pH 6.93 SU Specific Conductance 384 uS/cm Temperature 10.43 deg C
Turbidity 3.4 NTU

COLLECTED BY (PRINT) W. Shaw / D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 6/6/14 11:15	RECEIVED BY (Printed Name) K. Green (Signature) <i>K. Green</i>	Date/Time 6/6/14 11:15
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5702 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Los Alamos
 SAMPLE ID: CALA-14-79462 WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		6/6/14	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		955	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	BP
LOCATION ID: LAO-3a		↓	FIELD PREP:	F	ok
LOCATION TYPE: OBS		↓	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	UA
NA	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	y	NA
NA	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen NA mg/L Flow (in gpm) NA GPM Oxidation-Reduction Potential NA mV
 pH NA SU Specific Conductance NA uS/cm Temperature NA deg C
 Turbidity NA NTU

COLLECTED BY (PRINT) W. Shaw / D. Fellenz

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 6/6/14 1115	RECEIVED BY (Printed Name) K. Green (Signature) <i>K. Green</i>	Date/Time 6/6/14 11:15
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

DATA VALIDATION REPORT

Chain Of Custody No. 2014-3518

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
350326	EPA:120.1	1				
350326	EPA:150.1	1				
350326	EPA:160.1	1				
350326	EPA:245.2	2				
350326	EPA:300.0	1				
350326	EPA:310.1	1				
350326	EPA:335.4	1				
350326	EPA:350.1	1				
350326	EPA:351.2	1				
350326	EPA:353.2	1				
350326	EPA:365.4	1				
350326	EPA:900	1				
350326	EPA:901.1	1				
350326	EPA:905.0	1				
350326	HASL-300:AM-241	1				
350326	HASL-300:ISOPU	1				
350326	HASL-300:ISOU	1				
350326	SM:A2340B	1				
350326	SW-846:6010C	1				
350326	SW-846:6020	1				
350326	SW-846:6850	1				
350326	SW-846:8011	1		1		
350326	SW-846:8081B	1				
350326	SW-846:8151A	1				
350326	SW-846:8260B	1		1		
350326	SW-846:8270D	1				
350326	SW-846:8310	1				
350326	SW-846:9060	1				

DATA VALIDATION REPORT

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
350326	EPA:120.1	1398576	1398576	1										1			1				
350326	EPA:150.1	1398487	1398487	1										1			1				
350326	EPA:160.1	1394969	1394969	1					1					1			1				
350326	EPA:245.2	1396344	1396342	2					1					1			2				
350326	EPA:300.0	1395154	1395154	1					1					1			1				
350326	EPA:310.1	1396657	1396657	1					2					2			1				
350326	EPA:335.4	1394269	1394268	1					1					1			2				
350326	EPA:350.1	1394294	1394293	1					1					1			2				
350326	EPA:351.2	1395984	1395983	1					1					1			1				
350326	EPA:353.2	1395986	1395986	1					1					1			1				
350326	EPA:365.4	1394300	1394298	1					1					1			2				
350326	EPA:900	1395947	1395947	1					1					1			1				
350326	EPA:901.1	1394848	1394848	1					1					1			1				
350326	EPA:905.0	1395946	1395946						1					1			1				
350326	EPA:905.0	1399211	1399211	1					1					1			1				
350326	HASL-300:AM-241	1395089	1395089	1					1					1			1				
350326	HASL-300:ISOPU	1395090	1395090	1					1					1			1				
350326	HASL-300:ISOU	1395091	1395091	1					1					1			1				
350326	SM:A2340B	1400195	1400195	1																	
350326	SW-846:6010C	1394919	1394918	1					1					1			1				
350326	SW-846:6020	1394858	1394857	1					1					1			1				
350326	SW-846:6850	1396215	1396214	1					1					1							
350326	SW-846:8011	1396056	1396055	1		1			1					1							
350326	SW-846:8081B	1394820	1394819	1					1					1							
350326	SW-846:8151A	1394997	1394996	1					1					1							
350326	SW-846:8260B	1397331	1397331	1		1			2					4							
350326	SW-846:8270D	1394991	1394990	1					1					1							
350326	SW-846:8310	1394823	1394822	1					1					1							
350326	SW-846:9060	1394347	1394347	1					1					1			3				

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	CALA-14-79462	1203115768	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203115770	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79435	1203115516	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203115519	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79435	1203106681	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203106684	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203106680	MB	1	0	0	0
EPA:245.2	INORGANIC	CALA-14-79456	350326003	REG	1	0	0	0
EPA:245.2	INORGANIC	CALA-14-79462	350326006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79428	1203110257	DUP	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203110253	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203110252	MB	1	0	0	0
EPA:245.2	INORGANIC	WSTMO-14-75612	1203110254	DUP	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CALA-14-79462	1203108128	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203107174	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203107171	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79435	1203111031	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203111037	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203111038	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203111027	MB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203111028	MB	2	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CALA-14-79456	1203106118	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CALA-14-79456	350326003	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79427	1203105442	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203104803	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203104798	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79435	1203107049	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79437	1203104864	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203104861	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203104860	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	BDW06-14-79470	1203109335	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CALA-14-79456	350326003	REG	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:351.2	GENERAL CHEMISTRY	LCS	1203109334	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203109333	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-14-79462	1203109348	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203109356	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203109347	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CALA-14-79462	1203109299	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CALA-14-79462	350326006	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79435	1203109298	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203104878	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203104877	MB	1	0	0	0
EPA:900	RAD	BDW08-14-79467	1203109196	DUP	2	0	0	0
EPA:900	RAD	CALA-14-79456	350326003	REG	2	0	0	0
EPA:900	RAD	LCS	1203109199	LCS	0	0	2	0
EPA:900	RAD	MB	1203109195	MB	2	0	0	0
EPA:901.1	RAD	CALA-14-79456	1203106457	DUP	5	0	0	0
EPA:901.1	RAD	CALA-14-79456	350326003	REG	5	0	0	0
EPA:901.1	RAD	LCS	1203106458	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203106456	MB	5	0	0	0
EPA:905.0	RAD	CALA-14-79456	1203117268	DUP	1	0	0	0
EPA:905.0	RAD	CALA-14-79456	350326003	REG	1	0	0	0
EPA:905.0	RAD	CAPU-14-79427	1203109192	DUP	1	0	0	0
EPA:905.0	RAD	LCS	1203109194	LCS	0	0	1	0
EPA:905.0	RAD	LCS	1203117270	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203109191	MB	1	0	0	0
EPA:905.0	RAD	MB	1203117267	MB	1	0	0	0
HASL-300:AM-241	RAD	BDW06-14-79470	1203107018	DUP	1	0	0	0
HASL-300:AM-241	RAD	CALA-14-79456	350326003	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203107019	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203107017	MB	1	0	0	0
HASL-300:ISOPU	RAD	BDW06-14-79470	1203107021	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CALA-14-79456	350326003	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203107022	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203107020	MB	2	0	0	0
HASL-300:ISOU	RAD	BDW06-14-79470	1203107024	DUP	3	0	0	0
HASL-300:ISOU	RAD	CALA-14-79456	350326003	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203107025	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203107023	MB	3	0	0	0
SM:A2340B	INORGANIC	CALA-14-79462	350326006	REG	1	0	0	0
SW-846:6010C	INORGANIC	CALA-14-79462	1203106574	DUP	17	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6010C	INORGANIC	CALA-14-79462	350326006	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203106573	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203106572	MB	17	0	0	0
SW-846:6020	INORGANIC	CALA-14-79462	1203106487	DUP	11	0	0	0
SW-846:6020	INORGANIC	CALA-14-79462	350326006	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203106486	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203106485	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CALA-14-79462	350326006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203109909	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203109908	MB	1	0	0	0
SW-846:8011	VOC	CALA-14-79449	350326007	FTB	2	1	0	0
SW-846:8011	VOC	CALA-14-79456	350326001	REG	2	1	0	0
SW-846:8011	VOC	LCS	1203109516	LCS	0	1	2	0
SW-846:8011	VOC	LCSD	1203109517	LCSD	0	1	2	0
SW-846:8011	VOC	MB	1203109515	MB	2	1	0	0
SW-846:8081B	PESTPCB	CALA-14-79456	350326004	REG	1	2	0	0
SW-846:8081B	PESTPCB	LCS	1203106357	LCS	0	2	1	0
SW-846:8081B	PESTPCB	LCSD	1203106360	LCSD	0	2	1	0
SW-846:8081B	PESTPCB	MB	1203106356	MB	1	2	0	0
SW-846:8151A	HERB	CALA-14-79456	350326005	REG	1	1	0	0
SW-846:8151A	HERB	LCS	1203106735	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203106738	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203106734	MB	1	1	0	0
SW-846:8260B	VOC	CALA-14-79449	350326008	FTB	78	3	0	0
SW-846:8260B	VOC	CALA-14-79456	350326003	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203112649	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203112650	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203115976	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203115977	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203112644	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203115975	MB	78	3	0	0
SW-846:8270D	SVOC	CALA-14-79456	350326003	REG	60	6	0	0
SW-846:8270D	SVOC	LCS	1203106719	LCS	0	6	56	0
SW-846:8270D	SVOC	LCSD	1203107061	LCSD	0	6	56	0
SW-846:8270D	SVOC	MB	1203106718	MB	60	6	0	0
SW-846:8310	SVOC	CALA-14-79456	350326002	REG	18	1	0	0
SW-846:8310	SVOC	LCS	1203106366	LCS	0	1	18	0
SW-846:8310	SVOC	LCSD	1203106367	LCSD	0	1	18	0
SW-846:8310	SVOC	MB	1203106364	MB	18	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CALA-14-79456	350326003	REG	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79415	1203105823	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79427	1203105822	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203105826	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203105820	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	VS-R28-V2-79984	1203112489	DUP	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203106572	METHOD BLANK	SW-846:6010C	W	Sodium	204	J	ug/L	300

No.

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
CALA-14-79456	350326005	SW-846:8151A	2,4-Dichlorophenylacetic acid	1394997	06-12-2014	169	137	43	10
LCSD	1203107061	SW-846:8270D	4-Terphenyl-d14	1394991	06-12-2014	23	135	34	
LCSD	1203107061	SW-846:8270D	Fluorobiphenyl[2-]	1394991	06-12-2014	12	102	32	
LCSD	1203107061	SW-846:8270D	Nitrobenzene-d5	1394991	06-12-2014	14	125	36	
LCSD	1203107061	SW-846:8270D	Tribromophenol[2,4,6-]	1394991	06-12-2014	19	129	26	

DATA VALIDATION REPORT

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

No.

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

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
1203106719	1203107061	SW-846:8270D	Aniline	1394990	06-12-2014	W	109	111	107	35			1	30
1203106719	1203107061	SW-846:8270D	Atrazine	1394990	06-12-2014	W	90	22	115	47			122	30
1203106719	1203107061	SW-846:8270D	Azobenzene	1394990	06-12-2014	W	87	17	112	40			134	30
1203106719	1203107061	SW-846:8270D	Benzidine	1394990	06-12-2014	W	83	123	124	10			38	30
1203106719	1203107061	SW-846:8270D	Benzoic Acid	1394990	06-12-2014	W	38	13	81	10			97	30
1203106719	1203107061	SW-846:8270D	Benzyl Alcohol	1394990	06-12-2014	W	77	47	90	33			48	30
1203106719	1203107061	SW-846:8270D	Bis(2-chloroethoxy)methane	1394990	06-12-2014	W	95	19	109	44			135	30
1203106719	1203107061	SW-846:8270D	Bis(2-chloroethyl)ether	1394990	06-12-2014	W	96	17	111	35			140	30
1203106719	1203107061	SW-846:8270D	Bis(2-ethylhexyl)phthalate	1394990	06-12-2014	W	90	21	124	37			126	30
1203106719	1203107061	SW-846:8270D	Bromophenyl-phenylether[4-]	1394990	06-12-2014	W	88	17	113	41			135	30
1203106719	1203107061	SW-846:8270D	Butylbenzylphthalate	1394990	06-12-2014	W	95	20	122	40			132	30
1203106719	1203107061	SW-846:8270D	Chloro-3-methylphenol[4-]	1394990	06-12-2014	W	85	21	111	46			122	30
1203106719	1203107061	SW-846:8270D	Chloronaphthalene[2-]	1394990	06-12-2014	W	75	12	98	36			143	30
1203106719	1203107061	SW-846:8270D	Chlorophenol[2-]	1394990	06-12-2014	W	83	19	99	39			125	30
1203106719	1203107061	SW-846:8270D	Chlorophenyl-phenyl[4-] Ether	1394990	06-12-2014	W	92	18	114	40			135	30
1203106719	1203107061	SW-846:8270D	Di-n-butylphthalate	1394990	06-12-2014	W	90	21	116	49			125	30
1203106719	1203107061	SW-846:8270D	Di-n-octylphthalate	1394990	06-12-2014	W	81	20	122	33			122	30
1203106719	1203107061	SW-846:8270D	Dibenzofuran	1394990	06-12-2014	W	88	16	107	45			137	30
1203106719	1203107061	SW-846:8270D	Dichlorobenzene[1,2-]	1394990	06-12-2014	W	61	6	87	27			162	30
1203106719	1203107061	SW-846:8270D	Dichlorobenzene[1,3-]	1394990	06-12-2014	W	60	0	100	25			200	30
1203106719	1203107061	SW-846:8270D	Dichlorobenzene[1,4-]	1394990	06-12-2014	W	62	6	88	24			164	30
1203106719	1203107061	SW-846:8270D	Dichlorobenzidine[3,3'-]	1394990	06-12-2014	W	85	19	113	31			128	30

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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
1203106719	1203107061	SW-846:8270D	Dichlorophenol[2,4-]	1394990	06-12-2014	W	80	14	106	45			139	30
1203106719	1203107061	SW-846:8270D	Diethylphthalate	1394990	06-12-2014	W	99	21	116	51			129	30
1203106719	1203107061	SW-846:8270D	Dimethyl Phthalate	1394990	06-12-2014	W	98	22	112	53			128	30
1203106719	1203107061	SW-846:8270D	Dimethylphenol[2,4-]	1394990	06-12-2014	W	82	19	99	43			124	30
1203106719	1203107061	SW-846:8270D	Dinitro-2-methylphenol[4,6-]	1394990	06-12-2014	W	97	16	114	34			144	30
1203106719	1203107061	SW-846:8270D	Dinitrophenol[2,4-]	1394990	06-12-2014	W	104	14	110	19			154	30
1203106719	1203107061	SW-846:8270D	Dinitrotoluene[2,4-]	1394990	06-12-2014	W	104	21	124	45			132	30
1203106719	1203107061	SW-846:8270D	Dinitrotoluene[2,6-]	1394990	06-12-2014	W	98	19	117	52			135	30
1203106719	1203107061	SW-846:8270D	Dioxane[1,4-]	1394990	06-12-2014	W	72	46	73	26			44	30
1203106719	1203107061	SW-846:8270D	Diphenylamine	1394990	06-12-2014	W	86	17	111	47			135	30
1203106719	1203107061	SW-846:8270D	Hexachlorobutadiene	1394990	06-12-2014	W	54	0	92	19			200	30
1203106719	1203107061	SW-846:8270D	Hexachlorocyclopentadiene	1394990	06-12-2014	W	56	7	72	15			159	30
1203106719	1203107061	SW-846:8270D	Hexachloroethane	1394990	06-12-2014	W	55	0	85	20			200	30
1203106719	1203107061	SW-846:8270D	Isophorone	1394990	06-12-2014	W	91	18	133	49			135	30
1203106719	1203107061	SW-846:8270D	Methylphenol[2-]	1394990	06-12-2014	W	78	25	90	32			103	30
1203106719	1203107061	SW-846:8270D	Methylphenol[4-]	1394990	06-12-2014	W	79	28	100	28			95	30
1203106719	1203107061	SW-846:8270D	Nitroaniline[2-]	1394990	06-12-2014	W	103	24	117	44			124	30
1203106719	1203107061	SW-846:8270D	Nitroaniline[3-]	1394990	06-12-2014	W	116	81	124	45			35	30
1203106719	1203107061	SW-846:8270D	Nitroaniline[4-]	1394990	06-12-2014	W	124	58	133	38			72	30
1203106719	1203107061	SW-846:8270D	Nitrobenzene	1394990	06-12-2014	W	94	15	119	41			145	30
1203106719	1203107061	SW-846:8270D	Nitrophenol[2-]	1394990	06-12-2014	W	86	14	111	42			145	30
1203106719	1203107061	SW-846:8270D	Nitrophenol[4-]	1394990	06-12-2014	W	26	16	77	16			49	30
1203106719	1203107061	SW-846:8270D	Nitroso-di-n-propylamine[N-]	1394990	06-12-2014	W	90	17	113	39			137	30
1203106719	1203107061	SW-846:8270D	Nitrosodimethylamine[N-]	1394990	06-12-2014	W	71	48	75	18			39	30
1203106719	1203107061	SW-846:8270D	Nitrosopyrrolidine[N-]	1394990	06-12-2014	W	95	50	106	42			61	30
1203106719	1203107061	SW-846:8270D	Oxybis(1-chloropropane)[2,2'-]	1394990	06-12-2014	W	76	11	120	23			149	30
1203106719	1203107061	SW-846:8270D	Phenol	1394990	06-12-2014	W	36	15	77	13			80	30
1203106719	1203107061	SW-846:8270D	Pyridine	1394990	06-12-2014	W	84	91	88	11			8	30
1203106719	1203107061	SW-846:8270D	Tetrachlorobenzene[1,2,4,5]	1394990	06-12-2014	W	63	10	95	36			145	30

DATA VALIDATION REPORT

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203106719	1203107061	SW-846:8270D	Tetrachlorophenol[2,3,4,6-]	1394990	06-12-2014	W	98	18	120	45			139	30
1203106719	1203107061	SW-846:8270D	Trichlorobenzene[1,2,4-]	1394990	06-12-2014	W	58	7	92	26			156	30
1203106719	1203107061	SW-846:8270D	Trichlorophenol[2,4,5-]	1394990	06-12-2014	W	87	16	111	41			139	30
1203106719	1203107061	SW-846:8270D	Trichlorophenol[2,4,6-]	1394990	06-12-2014	W	90	16	109	41			139	30

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

Field Sample ID	Lab Sample ID	LD Lab Sample ID	Analytical Method	Parameter Name	Sample Matrix	Lab Result	LD Lab Result	Lab Units	Detect Flag	LD Detect Flag	RPD	RPD Limit
CALA-14-79462	350326006	1203109299	EPA:365.4	Total Phosphate as	W	0.127	0.269	mg/L	Y	Y	71.7	20
CALA-14-79456	350326003	1203117268	EPA:905.0	Strontium-90	W	12.4	17.4	pCi/L	Y	Y	33.4	20

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	HASL-300-AM-241	Americium-241	U	U	R5	N	.006	pCi/L	.006	pCi/L	0.0346	0.00529	W	06/06/2014		1395089	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 Matrx	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Atrazine	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Azobenzene	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Bis(2-chloroethoxy)methane	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Bis(2-chloroethyl)ether	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Bis(2-ethylhexyl)phthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Bromophenyl-phenylether[4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Butylbenzylphthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	-1.47	pCi/L	-1.47	pCi/L	5.20	1.48	W	06/06/2014		1394848	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Chloro-3-methylphenol[4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Chloronaphthalene[2-]	U	JJ	SV12a	N	1.04	ug/L	1.04	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Chlorophenol[2-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Chlorophenyl-phenyl[4-] Ether	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	.725	pCi/L	.725	pCi/L	4.85	1.10	W	06/06/2014		1394848	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Di-n-butylphthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Di-n-octylphthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dibenzofuran	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dichlorobenzene[1,2-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dichlorobenzene[1,3-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dichlorobenzene[1,4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dichlorobenzidine[3,3'-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dichlorophenol[2,4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Diethylphthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dimethyl Phthalate	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dimethylphenol[2,4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dinitro-2-methylphenol[4,6-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dinitrophenol[2,4-]	U	JJ	SV12a	N	20.8	ug/L	20.8	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dinitrotoluene[2,4-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Dinitrotoluene[2,6-]	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Diphenylamine	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Hexachlorobutadiene	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Hexachlorocyclopentadiene	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Hexachloroethane	U	JJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y

DATA VALIDATION REPORT

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Isophorone	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Methylphenol[2-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-.549	pCi/L	-.549	pCi/L	10.5	2.96	W	06/06/2014		1394848	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Nitroaniline[2-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Nitrobenzene	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Nitrophenol[2-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Nitroso-di-n-propylamine[N-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Oxybis[1-chloropropane][2,2'-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00408	pCi/L	-.00408	pCi/L	0.0226	0.00408	W	06/06/2014		1395090	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.00817	pCi/L	.00817	pCi/L	0.0372	0.00646	W	06/06/2014		1395090	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	13.8	pCi/L	13.8	pCi/L	56.6	17.2	W	06/06/2014		1394848	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	.273	pCi/L	.273	pCi/L	6.30	1.61	W	06/06/2014		1394848	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	EPA:905.0	Strontium-90		J	R10	Y	12.4	pCi/L	12.4	pCi/L	0.715	0.641	W	06/06/2014		1399211	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Tetrachlorobenzene[1,2,4,5]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Tetrachlorophenol[2,3,4,6-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Trichlorobenzene[1,2,4-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Trichlorophenol[2,4,5-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	SVOC	SW-846.8270D	Trichlorophenol[2,4,6-]	U	UJ	SV12a	N	10.4	ug/L	10.4	ug/L			W	06/06/2014		1394991	VAL	Y
LAO-3a	2014-3518	CALA-14-79456	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	.0235	pCi/L	.0235	pCi/L	0.0687	0.0111	W	06/06/2014		1395091	VAL	Y
LAO-3a	2014-3518	CALA-14-79462	REG	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus		J	10a	Y	0.127	mg/L	0.127	mg/L			W	06/06/2014		1394300	VAL	Y

Reason Code

Description

110a	The sample and the duplicate sample results were >=5X the RL and the duplicate RPD was >20% for water samples and >35% for soil samples.
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
R10	Associated duplicate sample has DER or RER> the analytical laboratory's acceptance limits.
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.

DATA VALIDATION REPORT

Reason Code

U_LAB

Description

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CALA-14-79449	LAO-3a	FTB	SW-846:8011	0	2
CALA-14-79449	LAO-3a	FTB	SW-846:8260B	0	78
CALA-14-79456	LAO-3a	REG	EPA:245.2	0	1
CALA-14-79456	LAO-3a	REG	EPA:335.4	0	1
CALA-14-79456	LAO-3a	REG	EPA:351.2	0	1
CALA-14-79456	LAO-3a	REG	EPA:900	0	2
CALA-14-79456	LAO-3a	REG	EPA:901.1	0	5
CALA-14-79456	LAO-3a	REG	EPA:905.0	0	1
CALA-14-79456	LAO-3a	REG	HASL-300:AM-241	0	1
CALA-14-79456	LAO-3a	REG	HASL-300:ISOPU	0	2
CALA-14-79456	LAO-3a	REG	HASL-300:ISOU	0	3
CALA-14-79456	LAO-3a	REG	SW-846:8011	0	2
CALA-14-79456	LAO-3a	REG	SW-846:8081B	0	1
CALA-14-79456	LAO-3a	REG	SW-846:8151A	0	1
CALA-14-79456	LAO-3a	REG	SW-846:8260B	0	78
CALA-14-79456	LAO-3a	REG	SW-846:8270D	0	60
CALA-14-79456	LAO-3a	REG	SW-846:8310	0	18
CALA-14-79456	LAO-3a	REG	SW-846:9060	0	1
CALA-14-79462	LAO-3a	REG	EPA:120.1	0	1
CALA-14-79462	LAO-3a	REG	EPA:150.1	0	1
CALA-14-79462	LAO-3a	REG	EPA:160.1	0	1
CALA-14-79462	LAO-3a	REG	EPA:245.2	0	1
CALA-14-79462	LAO-3a	REG	EPA:300.0	0	4
CALA-14-79462	LAO-3a	REG	EPA:310.1	0	2
CALA-14-79462	LAO-3a	REG	EPA:350.1	0	1
CALA-14-79462	LAO-3a	REG	EPA:353.2	0	1
CALA-14-79462	LAO-3a	REG	EPA:365.4	0	1
CALA-14-79462	LAO-3a	REG	SM:A2340B	0	1
CALA-14-79462	LAO-3a	REG	SW-846:6010C	0	17
CALA-14-79462	LAO-3a	REG	SW-846:6020	0	11
CALA-14-79462	LAO-3a	REG	SW-846:6850	0	1



July 02, 2014

www.gel.com

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: 350326
SDG: 2014-3518

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 10, 2014, and analyzed for 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: 2014-3518
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 350326
SDG: 2014-3518

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 350326
SDG # : 2014-3518**

July 02, 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 June 10, 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:

<u>Laboratory ID</u>	<u>Client ID</u>
350326001	CALA-14-79456
350326002	CALA-14-79456
350326003	CALA-14-79456
350326004	CALA-14-79456
350326005	CALA-14-79456
350326006	CALA-14-79462
350326007	CALA-14-79449
350326008	CALA-14-79449

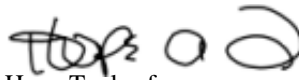
Case Narrative

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

Data Package

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: GC 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.

A handwritten signature in black ink, appearing to read 'Hope Taylor'.

Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 02 July 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	SC000122014-12
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Chain of Custody and Supporting Documentation



SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANK</u>		SDG/AR/COC/Work Order: <u>2014-3518</u>
Received By: <u>P. N. Qunt</u>		Date Received: <u>6/10/14</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>00CPM</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags <u>Blue ice</u> Dry ice None Other (describe) <u>30</u> all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?			<input checked="" type="checkbox"/>	Sample ID's affected: <u>CAIA-14-79449 Lab. rec'd (1) container</u> <u>Each For BOILEDDB + B2606 Chain indicates (2) each</u>
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>1</u> FedEx Air FedEx Ground UPS Field Services Courier Other

Comments (Use Continuation Form if needed):

Subject: Sample receipt issue from 06/10/14
From: Pat Dent <Pat.Dent@gel.com>
Date: 6/11/2014 8:51 AM
To: "Keith R. Greene" <kgreene@lanl.gov>
CC: "team.davis" <team.davis@gel.com>, LANL@amrad.com, npatel@lanl.gov

RN#2014-3518
CALA-14-79449 the lab received 1-container each for 8011EDB and 8260b chain indicates 2-each.

Thanks!!

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

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

SHIP DATE: 09JUN14
ACTWGT: 33.0 LB MEN
CAD: 0014176/CAFE2704
BILL SENDER

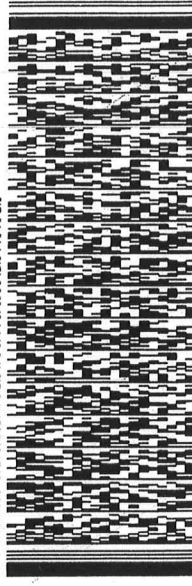
TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: WE991158W100



FedEx
Express



J13111306230126

2 of 2

MPS# 5908 1777 1435

Mstr# 5908 1777 1424

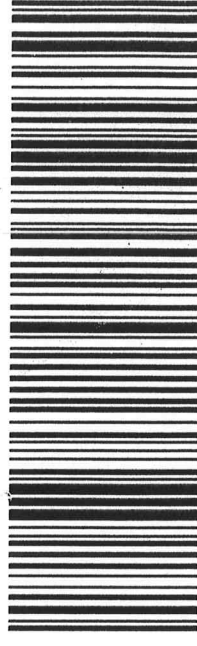
0201

TUE - 10 JUN 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: 09JUN14
ACTWGT: 46.0 LB MEN
CAD: 0014176/CAFE2704
BILL SENDER

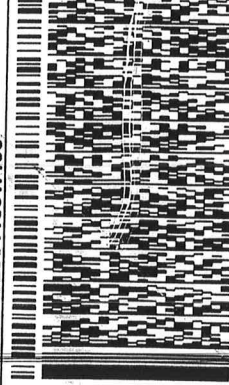
TO VALERIE DAVIS

GENERAL ENGINEERING LAB
2040 SAVAGE RD

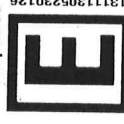
CHARLESTON SC 29407

(843) 566-8171

REF: WE991158W100



FedEx
Express



J13111306230126

1 of 2

TRK# 5908 1777 1424

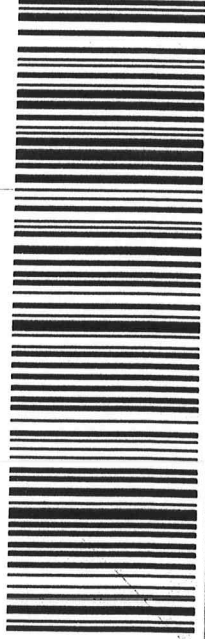
0201 MASTER ##

TUE - 10 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 RIT2 10/11



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 2014-3518**

Method/Analysis Information

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

Analytical Method: SW846 8260B DOE-AL

Analytical Batch Number: 1397331

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
350326003	CALA-14-79456
350326008	CALA-14-79449
1203112644	Method Blank (MB)
1203112645	350261001(CAWA-14-79408) Post Spike (PS)
1203112646	350261001(CAWA-14-79408) Post Spike (PS)
1203112647	350261001(CAWA-14-79408) Post Spike Duplicate (PSD)
1203112648	350261001(CAWA-14-79408) Post Spike Duplicate (PSD)
1203112649	Laboratory Control Sample (LCS)
1203112650	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**

The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS 1203112650 (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 350261001 (CAWA-14-79408) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike 1203112645 (CAWA-14-79408) and 1203112646 (CAWA-14-79408) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Matrix Spike Duplicate (PSD) Recovery Statement

The spike duplicate 1203112648 (CAWA-14-79408) recoveries were not all within the acceptance limits. See the Data Exception Report in the miscellaneous section of the data package.

Relative Percent Difference (RPD) Statement

The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance

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

Technical Information**Holding Time Specifications**

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

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information**Electronic Packaging Comment**

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

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

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1308335.

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
VOAA.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890A/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all 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: 2014-3518 GEL Work Order: 350326

The Qualifiers in this report are defined as follows:

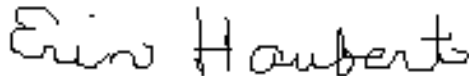
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
-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



Name: Erin Haubert

Date: 07 JUL 2014

Title: Data Validator

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518

Lab Sample ID: 350326003

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client ID: CALA-14-79456

Batch ID: 1397331

Run Date: 06/20/2014 00:13

Prep Date: 06/20/2014 00:13

Data File: 061914\AK443.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOAA.I

Analyst: JEB

Project: ESHL00714

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	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: 2014-3518

Lab Sample ID: 350326003

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CALA-14-79456

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1397331

Inst: VOAA.I

Dilution: 1

Run Date: 06/20/2014 00:13

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/20/2014 00:13

Data File: 061914\AK443.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: 2014-3518

Lab Sample ID: 350326003

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CALA-14-79456

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1397331

Inst: VOAA.I

Dilution: 1

Run Date: 06/20/2014 00:13

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/20/2014 00:13

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	50.8	50.0	ug/L	102 (80%-120%)
Toluene-d8	50.0	50.0	ug/L	99.9 (80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	13.742	9.25	ug/L	0	J
	unknown	15.687	5.97	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518

Lab Sample ID: 350326008

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CALA-14-79449

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1397331

Inst: VOAA.I

Dilution: 1

Run Date: 06/20/2014 00:38

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/20/2014 00:38

Data File: 061914\AK444.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: 2014-3518

Lab Sample ID: 350326008

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CALA-14-79449

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1397331

Inst: VOAA.I

Dilution: 1

Run Date: 06/20/2014 00:38

Analyst: JEB

Purge Vol: 5 mL

Prep Date: 06/20/2014 00:38

Data File: 061914\AK444.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: 2014-3518
Lab Sample ID: 350326008

Client ID: CALA-14-79449
Batch ID: 1397331
Run Date: 06/20/2014 00:38
Prep Date: 06/20/2014 00:38
Data File: 061914\AK444.D

Date Collected: 06/06/2014 09:55
Date Received: 06/10/2014 09:10
Client: ARSL004
Method: SW846 8260B DOE-AL
Inst: VOAA.I
Analyst: JEB

Matrix: W
Project: ESHL00714
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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	52.9	50.0	ug/L	106 (78%-124%)
Bromofluorobenzene	50.8	50.0	ug/L	102 (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
No Tentatively Identified Compounds Found				ug/L		

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3518**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203112649	LCS for batch 1397331	103	101	100
1203112650	LCS for batch 1397331	104	100	100
1203112644	MB for batch 1397331	98	101	100
350326003	CALA-14-79456	106	100	102
350326008	CALA-14-79449	106	101	102
1203112645	CAWA-14-79408PS	105	101	100
1203112647	CAWA-14-79408PSD	104	100	101
1203112646	CAWA-14-79408PS	105	102	103
1203112648	CAWA-14-79408PSD	105	101	103

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

Page 1 of 8

SDG Number: 2014-3518

Sample Type: Post Spike

Client ID: CAWA-14-79408PS

Matrix: W

Lab Sample ID 1203112645

Instrument: VOAA.I

Analysis Date: 06/20/2014 02:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00 U	95.3	95	72-120
75-05-8	PS Acetonitrile	1250	0.00 U	1230	98	61-135
67-64-1	PS Acetone	250	0.00 U	137	55	29-144
74-88-4	PS Iodomethane	250	0.00 U	254	102	73-120
75-15-0	PS Carbon disulfide	250	0.00 U	259	104	79-138
108-05-4	PS Vinyl acetate	250	0.00 U	185	74	60-136
78-93-3	PS 2-Butanone	250	0.00 U	183	73	38-136
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	247	99	70-132
591-78-6	PS 2-Hexanone	250	0.00 U	194	78	48-137
1634-04-4	PS tert-Butyl methyl ether	50.0	0.510 J	54.3	108	71-124
79-01-6	PS Trichloroethylene	50.0	0.460 J	50.6	100	75-125
127-18-4	PS Tetrachloroethylene	50.0	0.680 J	49.4	97	67-124
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	38.4	77	51-133
74-87-3	PS Chloromethane	50.0	0.00 U	40.0	80	54-135
75-01-4	PS Vinyl chloride	50.0	0.00 U	43.8	88	52-129
74-83-9	PS Bromomethane	50.0	0.00 U	35.0	70	67-128
75-00-3	PS Chloroethane	50.0	0.00 U	43.1	86	69-120
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	47.4	95	66-126
60-29-7	PS Ethyl ether	50.0	0.00 U	44.9	90	69-120
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	47.0	94	74-130
75-09-2	PS Methylene chloride	50.0	0.630 U	45.2	89	73-120
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	49.0	98	75-124

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2014-3518

Sample Type: Post Spike

Client ID: CAWA-14-79408PS

Matrix: W

Lab Sample ID 1203112645

Instrument: VOAA.I

Analysis Date: 06/20/2014 02:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	50.3	101	76-122
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	50.9	102	77-121
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	53.7	107	72-129
74-97-5	PS Bromochloromethane	50.0	0.00 U	54.0	108	78-122
67-66-3	PS Chloroform	50.0	0.00 U	53.3	107	75-123
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	55.4	111	76-129
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	48.9	98	76-125
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	57.1	114	76-132
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	53.1	106	68-128
71-43-2	PS Benzene	50.0	0.00 U	49.4	99	75-120
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	50.5	101	75-120
74-95-3	PS Dibromomethane	50.0	0.00 U	54.1	108	77-122
75-27-4	PS Bromodichloromethane	50.0	0.00 U	58.6	117	76-129
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	55.6	111	75-127
108-88-3	PS Toluene	50.0	0.00 U	48.9	98	72-120
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	56.4	113	73-123
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	52.5	105	77-120
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	51.5	103	73-120
124-48-1	PS Dibromochloromethane	50.0	0.00 U	64.0	128	70-130
108-90-7	PS Chlorobenzene	50.0	0.00 U	48.9	98	74-120
100-41-4	PS Ethylbenzene	50.0	0.00 U	48.5	97	72-120
95-47-6	PS o-Xylene	50.0	0.00 U	50.1	100	72-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2014-3518

Sample Type: Post Spike

Client ID: CAWA-14-79408PS

Matrix: W

Lab Sample ID 1203112645

Instrument: VOAA.I

Analysis Date: 06/20/2014 02:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	PS Styrene	50.0	0.00 U	50.9	102	74-124
75-25-2	PS Bromoform	50.0	0.00 U	65.7	131	61-135
98-82-8	PS Isopropylbenzene	50.0	0.00 U	48.8	98	71-124
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	53.9	108	74-124
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	53.5	107	71-125
108-86-1	PS Bromobenzene	50.0	0.00 U	50.0	100	72-120
103-65-1	PS n-Propylbenzene	50.0	0.00 U	45.0	90	69-121
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	47.9	96	71-123
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	48.1	96	71-120
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	47.2	94	70-120
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	48.7	97	72-124
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	45.5	91	71-122
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	47.3	95	71-124
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	46.1	92	70-124
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	47.6	95	70-120
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	45.9	92	70-120
104-51-8	PS n-Butylbenzene	50.0	0.00 U	43.5	87	69-125
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	44.8	90	60-129
91-20-3	PS Naphthalene	50.0	0.00 U	51.2	102	58-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	48.2	96	52-132
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	45.4	91	59-126
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	57.8	116	78-128

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike

Client ID: CAWA-14-79408PS

Matrix: W

Lab Sample ID 1203112645

Instrument: VOAA.I

Analysis Date: 06/20/2014 02:40

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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 U	49.0	98	72-120
71-36-3	PS n-Butyl alcohol	5000	0.00 U	6130	123	64-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-79408PSD

Matrix: W

Lab Sample ID 1203112647

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:04

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00	U	93.8	94	72-120	2 0-20
75-05-8	PSD Acetonitrile	1250	0.00	U	1140	91	61-135	8 0-20
67-64-1	PSD Acetone	250	0.00	U	128	51	29-144	7 0-20
74-88-4	PSD Iodomethane	250	0.00	U	246	98	73-120	3 0-20
75-15-0	PSD Carbon disulfide	250	0.00	U	250	100	79-138	3 0-20
108-05-4	PSD Vinyl acetate	250	0.00	U	182	73	60-136	2 0-20
78-93-3	PSD 2-Butanone	250	0.00	U	170	68	38-136	7 0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00	U	233	93	70-132	6 0-20
591-78-6	PSD 2-Hexanone	250	0.00	U	182	73	48-137	6 0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.510	J	52.1	103	71-124	4 0-20
79-01-6	PSD Trichloroethylene	50.0	0.460	J	49.3	98	75-125	3 0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.680	J	47.8	94	67-124	3 0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00	U	38.9	78	51-133	1 0-20
74-87-3	PSD Chloromethane	50.0	0.00	U	41.0	82	54-135	3 0-20
75-01-4	PSD Vinyl chloride	50.0	0.00	U	44.4	89	52-129	1 0-20
74-83-9	PSD Bromomethane	50.0	0.00	U	38.8	78	67-128	10 0-20
75-00-3	PSD Chloroethane	50.0	0.00	U	43.5	87	69-120	1 0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00	U	48.2	96	66-126	2 0-20
60-29-7	PSD Ethyl ether	50.0	0.00	U	45.9	92	69-120	2 0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00	U	45.8	92	74-130	3 0-20
75-09-2	PSD Methylene chloride	50.0	0.630	U	44.1	87	73-120	3 0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00	U	47.7	95	75-124	3 0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-79408PSD

Matrix: W

Lab Sample ID 1203112647

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:04

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	49.4	99	76-122	2	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	49.7	99	77-121	2	0-20
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	51.9	104	72-129	3	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	52.6	105	78-122	3	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	51.8	104	75-123	3	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	53.7	107	76-129	3	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	47.6	95	76-125	3	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	55.1	110	76-132	3	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	51.0	102	68-128	4	0-20
71-43-2	PSD Benzene	50.0	0.00 U	48.0	96	75-120	3	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	49.0	98	75-120	3	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	52.0	104	77-122	4	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	56.7	113	76-129	3	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	53.2	106	75-127	4	0-20
108-88-3	PSD Toluene	50.0	0.00 U	47.6	95	72-120	3	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	54.0	108	73-123	4	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	50.1	100	77-120	5	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	49.3	99	73-120	4	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	61.9	124	70-130	3	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	47.8	96	74-120	2	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	47.7	95	72-120	2	0-20
95-47-6	PSD o-Xylene	50.0	0.00 U	49.2	98	72-120	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-79408PSD

Matrix: W

Lab Sample ID 1203112647

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:04

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
100-42-5	PSD Styrene	50.0	0.00 U	51.3	103	74-124	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	64.0	128	61-135	3	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	48.2	96	71-124	1	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	52.1	104	74-124	3	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	51.3	103	71-125	4	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	49.0	98	72-120	2	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	44.5	89	69-121	1	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	47.7	95	71-123	0	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	47.4	95	71-120	2	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	46.3	93	70-120	2	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	49.2	98	72-124	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	45.1	90	71-122	1	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	46.7	93	71-124	1	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	45.1	90	70-124	2	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	45.9	92	70-120	4	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	43.9	88	70-120	4	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	41.6	83	69-125	4	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	41.8	84	60-129	7	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	48.8	98	58-134	5	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	44.9	90	52-132	7	0-20
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	41.2	82	59-126	10	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	56.3	113	78-128	3	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-79408PSD

Matrix: W

Lab Sample ID 1203112647

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:04

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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 U	47.2	94	72-120	4	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	5170	103	64-138	17	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3518

Sample Type: Post Spike

Client ID: CAWA-14-79408PS

Matrix: W

Lab Sample ID 1203112646

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:28

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00 U	159	63	57-131
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	172	69 *	76-133
107-05-1	PS Allyl chloride	250	0.00 U	174	69	65-130
107-13-1	PS Acrylonitrile	250	0.00 U	196	79	70-128
107-12-0	PS Propionitrile	250	0.00 U	218	87	68-131
126-98-7	PS Methacrylonitrile	250	0.00 U	207	83	64-129
80-62-6	PS Methyl methacrylate	250	0.00 U	207	83	76-120
97-63-2	PS Ethyl methacrylate	250	0.00 U	200	80	72-122
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2150	86	72-134
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	38.7	77	46-140

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-79408PSD

Matrix: W

Lab Sample ID 1203112648

Instrument: VOAA.I

Analysis Date: 06/20/2014 03:53

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00 U	151	60	57-131	5	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	171	68 *	76-133	1	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	169	68	65-130	3	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	194	78	70-128	1	0-20
107-12-0	PSD Propionitrile	250	0.00 U	207	83	68-131	5	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	207	83	64-129	0	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	213	85	76-120	3	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	194	78	72-122	3	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2010	81	72-134	7	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	36.5	73	46-140	6	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1397331

Matrix: WATER

Lab Sample ID 1203112649

Instrument: VOAA.I

Analysis Date: 06/19/2014 19:20

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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	97.8	98	80-120
75-05-8	LCS Acetonitrile	1250	0.0	1140	91	63-131
67-64-1	LCS Acetone	250	0.0	210	84	50-149
74-88-4	LCS Iodomethane	250	0.0	239	96	75-120
75-15-0	LCS Carbon disulfide	250	0.0	250	100	80-136
108-05-4	LCS Vinyl acetate	250	0.0	264	105	78-130
78-93-3	LCS 2-Butanone	250	0.0	211	84	57-148
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	234	94	75-130
591-78-6	LCS 2-Hexanone	250	0.0	207	83	64-149
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	39.5	79	58-129
74-87-3	LCS Chloromethane	50.0	0.0	39.6	79	59-131
75-01-4	LCS Vinyl chloride	50.0	0.0	44.8	90	59-127
74-83-9	LCS Bromomethane	50.0	0.0	37.2	74	70-125
75-00-3	LCS Chloroethane	50.0	0.0	43.6	87	73-120
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	48.8	98	73-123
60-29-7	LCS Ethyl ether	50.0	0.0	44.1	88	73-120
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	45.5	91	80-128
75-09-2	LCS Methylene chloride	50.0	0.0	41.9	84	75-120
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	49.7	99	74-122
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	47.1	94	80-121
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	47.5	95	79-120
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	48.1	96	79-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1397331

Matrix: WATER

Lab Sample ID 1203112649

Instrument: VOAA.I

Analysis Date: 06/19/2014 19:20

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	53.9	108	79-130
74-97-5	LCS Bromochloromethane	50.0	0.0	50.3	101	80-121
67-66-3	LCS Chloroform	50.0	0.0	49.7	99	79-120
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	53.7	107	80-128
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	48.1	96	80-123
56-23-5	LCS Carbon tetrachloride	50.0	0.0	55.7	111	80-131
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	48.6	97	73-120
71-43-2	LCS Benzene	50.0	0.0	47.0	94	78-120
79-01-6	LCS Trichloroethylene	50.0	0.0	48.9	98	80-121
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	47.3	95	79-120
74-95-3	LCS Dibromomethane	50.0	0.0	49.9	100	80-120
75-27-4	LCS Bromodichloromethane	50.0	0.0	54.2	108	80-126
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	53.8	108	80-125
108-88-3	LCS Toluene	50.0	0.0	48.2	96	78-120
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	54.8	110	79-121
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	49.4	99	78-120
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	48.6	97	75-120
127-18-4	LCS Tetrachloroethylene	50.0	0.0	49.6	99	74-123
124-48-1	LCS Dibromochloromethane	50.0	0.0	60.1	120	73-129
108-90-7	LCS Chlorobenzene	50.0	0.0	48.2	96	79-120
100-41-4	LCS Ethylbenzene	50.0	0.0	49.2	98	79-120
95-47-6	LCS o-Xylene	50.0	0.0	50.2	100	80-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1397331

Matrix: WATER

Lab Sample ID 1203112649

Instrument: VOAA.I

Analysis Date: 06/19/2014 19:20

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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	52.6	105	80-121
75-25-2	LCS Bromoform	50.0	0.0	62.4	125	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	51.2	102	76-123
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	50.0	100	76-120
108-86-1	LCS Bromobenzene	50.0	0.0	49.4	99	79-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	48.3	97	80-123
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	50.9	102	80-120
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	49.2	98	79-120
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	49.2	98	79-120
98-06-6	LCS tert-Butylbenzene	50.0	0.0	52.0	104	79-122
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	48.6	97	80-120
135-98-8	LCS sec-Butylbenzene	50.0	0.0	51.2	102	80-121
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	50.9	102	80-121
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	49.0	98	76-120
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	47.6	95	78-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	50.1	100	80-123
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	54.4	109	71-128
91-20-3	LCS Naphthalene	50.0	0.0	52.1	104	64-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	52.0	104	61-132
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	50.1	100	66-130
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	55.4	111	80-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1397331

Matrix: WATER

Lab Sample ID 1203112649

Instrument: VOAA.I

Analysis Date: 06/19/2014 19:20

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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	49.2	98	78-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5250	105	67-137

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1397331

Matrix: WATER

Lab Sample ID 1203112650

Instrument: VOAA.I

Analysis Date: 06/19/2014 20:09

Dilution: 1

Analyst: JEB

Purge Vol: 5 mL

Batch ID: 1397331

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	183	73	65-126
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	181	73	73-132
107-05-1	LCS Allyl chloride	250	0.0	183	73	67-127
107-13-1	LCS Acrylonitrile	250	0.0	198	79	74-122
107-12-0	LCS Propionitrile	250	0.0	213	85	73-124
126-98-7	LCS Methacrylonitrile	250	0.0	210	84	68-123
80-62-6	LCS Methyl methacrylate	250	0.0	217	87	79-120
97-63-2	LCS Ethyl methacrylate	250	0.0	208	83	77-120
78-83-1	LCS Isobutyl alcohol	2500	0.0	2130	85	72-133
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	41.4	83	57-142

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3518	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1397331	Instrument ID:	VOAA.I	Data File:	061914\AK434SN.D
Lab Sample ID:	1203112644	Prep Date:	06/19/2014 20:33	Analyzed:	06/19/14 20:33
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 1397331	1203112649	061914\AK431SN.D	06/19/14	1920
02 LCS for batch 1397331	1203112650	061914\AK433SN.D	06/19/14	2009
03 CALA-14-79456	350326003	061914\AK443.D	06/20/14	0013
04 CALA-14-79449	350326008	061914\AK444.D	06/20/14	0038
05 CAWA-14-79408PS	1203112645	061914\AK449.D	06/20/14	0240
06 CAWA-14-79408PSD	1203112647	061914\AK450.D	06/20/14	0304
07 CAWA-14-79408PS	1203112646	061914\AK451.D	06/20/14	0328
08 CAWA-14-79408PSD	1203112648	061914\AK452.D	06/20/14	0353

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Matrix: WATER
Lab Sample ID: 1203112644	
Client Sample: QC for batch 1397331	Client: ARSL004
Client ID: MB for batch 1397331	Method: SW846 8260B DOE-AL
Batch ID: 1397331	Project: QC
Run Date: 06/19/2014 20:33	SOP Ref: GL-OA-E-038
Prep Date: 06/19/2014 20:33	Dilution: 1
Data File: 061914\AK434SN.D	Purge Vol: 5 mL
	Analyst: JEB
	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: 2014-3518	Matrix: WATER
Lab Sample ID: 1203112644	
Client Sample: QC for batch 1397331	Client: ARSL004
Client ID: MB for batch 1397331	Method: SW846 8260B DOE-AL
Batch ID: 1397331	Project: QC
Run Date: 06/19/2014 20:33	SOP Ref: GL-OA-E-038
Prep Date: 06/19/2014 20:33	Dilution: 1
Data File: 061914\AK434SN.D	Purge Vol: 5 mL
	Analyst: JEB
	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: 2014-3518		Matrix: WATER
Lab Sample ID: 1203112644		
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: MB for batch 1397331	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/19/2014 20:33	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/19/2014 20:33		
Data File: 061914\AK434SN.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	49.2	50.0	ug/L 98.4	(78%-124%)
Bromofluorobenzene	49.9	50.0	ug/L 99.8	(80%-120%)
Toluene-d8	50.3	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: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112645	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 02:40	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 02:40		
Data File: 061914\AK449.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		57.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		55.4	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		53.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		52.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		50.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		47.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.9	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		48.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		53.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		45.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		49.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		53.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		50.5	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		47.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.9	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		53.7	ug/L	0.300	1.00
78-93-3	2-Butanone		183	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		48.1	ug/L	0.300	1.00
591-78-6	2-Hexanone		194	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		47.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		46.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		247	ug/L	1.50	5.00
67-64-1	Acetone		137	ug/L	3.00	10.0
75-05-8	Acetonitrile		1230	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		49.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		50.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		54.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		58.6	ug/L	0.300	1.00
75-25-2	Bromoform		65.7	ug/L	0.300	1.00
74-83-9	Bromomethane		35.0	ug/L	0.300	1.00
75-15-0	Carbon disulfide		259	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112645	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 02:40	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 02:40		
Data File: 061914\AK449.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		57.1	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.9	ug/L	0.300	1.00
75-00-3	Chloroethane		43.1	ug/L	0.300	1.00
67-66-3	Chloroform		53.3	ug/L	0.300	1.00
74-87-3	Chloromethane		40.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		64.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		54.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		38.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		44.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		44.8	ug/L	0.300	1.00
74-88-4	Iodomethane		254	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		48.8	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		45.2	ug/L	3.00	10.0
91-20-3	Naphthalene		51.2	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		50.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.4	ug/L	0.300	1.00
108-88-3	Toluene		48.9	ug/L	0.300	1.00
79-01-6	Trichloroethylene		50.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		47.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		185	ug/L	1.50	5.00
75-01-4	Vinyl chloride		43.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		50.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		55.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		95.3	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6130	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		43.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		45.0	ug/L	0.300	1.00
95-47-6	o-Xylene		50.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.3	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		54.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		48.7	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112645	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 02:40	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 02:40				
Data File:	061914\AK449.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		49.0	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		56.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.4	50.0	ug/L	105	(78%-124%)
Bromofluorobenzene	50.1	50.0	ug/L	100	(80%-120%)
Toluene-d8	50.3	50.0	ug/L	101	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112646	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 03:28	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 03:28		
Data File: 061914\AK451.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		38.7	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		159	ug/L	1.50	5.00
107-13-1	Acrylonitrile		196	ug/L	1.00	5.00
107-05-1	Allyl chloride		174	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:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112646	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 03:28	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 03:28				
Data File:	061914\AK451.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		200	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		2150	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		207	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		207	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		218	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		172	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:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112646	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 03:28	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 03:28				
Data File:	061914\AK451.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	52.7	50.0	ug/L	105	(78%-124%)
Bromofluorobenzene	51.4	50.0	ug/L	103	(80%-120%)
Toluene-d8	50.8	50.0	ug/L	102	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112647	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 03:04	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 03:04		
Data File: 061914\AK450.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		56.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		53.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		52.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		50.1	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		45.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		47.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		44.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		51.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		41.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		47.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		51.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		49.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		45.9	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		49.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		43.9	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.9	ug/L	0.300	1.00
78-93-3	2-Butanone		170	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		47.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		182	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		46.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		45.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		233	ug/L	1.50	5.00
67-64-1	Acetone		128	ug/L	3.00	10.0
75-05-8	Acetonitrile		1140	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		48.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.0	ug/L	0.300	1.00
74-97-5	Bromochloromethane		52.6	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		56.7	ug/L	0.300	1.00
75-25-2	Bromoform		64.0	ug/L	0.300	1.00
74-83-9	Bromomethane		38.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		250	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112647	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 03:04	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 03:04		
Data File: 061914\AK450.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		55.1	ug/L	0.300	1.00
108-90-7	Chlorobenzene		47.8	ug/L	0.300	1.00
75-00-3	Chloroethane		43.5	ug/L	0.300	1.00
67-66-3	Chloroform		51.8	ug/L	0.300	1.00
74-87-3	Chloromethane		41.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		61.9	ug/L	0.300	1.00
74-95-3	Dibromomethane		52.0	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		38.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		45.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.7	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		41.8	ug/L	0.300	1.00
74-88-4	Iodomethane		246	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		48.2	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		44.1	ug/L	3.00	10.0
91-20-3	Naphthalene		48.8	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		47.8	ug/L	0.300	1.00
108-88-3	Toluene		47.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		182	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		49.7	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		53.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		93.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5170	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.5	ug/L	0.300	1.00
95-47-6	o-Xylene		49.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.7	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		52.1	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		49.2	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112647	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 03:04	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 03:04				
Data File:	061914\AK450.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		47.7	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		54.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.9	50.0	ug/L	104	(78%-124%)
Bromofluorobenzene	50.6	50.0	ug/L	101	(80%-120%)
Toluene-d8	50.0	50.0	ug/L	100	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Date Collected: 06/06/2014 09:05	Matrix: W
Lab Sample ID: 1203112648	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1397331	Client: ARSL004	Project: QC
Client ID: CAWA-14-79408PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1397331	Inst: VOAA.I	Dilution: 1
Run Date: 06/20/2014 03:53	Analyst: JEB	Purge Vol: 5 mL
Prep Date: 06/20/2014 03:53		
Data File: 061914\AK452.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		36.5	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		151	ug/L	1.50	5.00
107-13-1	Acrylonitrile		194	ug/L	1.00	5.00
107-05-1	Allyl chloride		169	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:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112648	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 03:53	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 03:53				
Data File:	061914\AK452.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		194	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		2010	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		207	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		213	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		207	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		171	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:	2014-3518	Date Collected:	06/06/2014 09:05	Matrix:	W
Lab Sample ID:	1203112648	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1397331	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-79408PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1397331	Inst:	VOAA.I	Dilution:	1
Run Date:	06/20/2014 03:53	Analyst:	JEB	Purge Vol:	5 mL
Prep Date:	06/20/2014 03:53				
Data File:	061914\AK452.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	52.5	50.0	ug/L	105	(78%-124%)
Bromofluorobenzene	51.4	50.0	ug/L	103	(80%-120%)
Toluene-d8	50.3	50.0	ug/L	101	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203112649		
Client Sample:	QC for batch 1397331	Client:	ARSL004
Client ID:	LCS for batch 1397331	Method:	SW846 8260B DOE-AL
Batch ID:	1397331	Inst:	VOAA.I
Run Date:	06/19/2014 19:20	Analyst:	JEB
Prep Date:	06/19/2014 19:20	Purge Vol:	5 mL
Data File:	061914\AK431SN.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		53.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		51.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		49.4	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		47.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		45.5	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		52.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.0	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		50.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		49.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		48.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		47.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		50.9	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		49.0	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		47.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		53.9	ug/L	0.300	1.00
78-93-3	2-Butanone		211	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		49.2	ug/L	0.300	1.00
591-78-6	2-Hexanone		207	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		49.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		50.9	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		234	ug/L	1.50	5.00
67-64-1	Acetone		210	ug/L	3.00	10.0
75-05-8	Acetonitrile		1140	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		47.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		50.3	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		54.2	ug/L	0.300	1.00
75-25-2	Bromoform		62.4	ug/L	0.300	1.00
74-83-9	Bromomethane		37.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		250	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Matrix: WATER
Lab Sample ID: 1203112649	
Client Sample: QC for batch 1397331	Client: ARSL004
Client ID: LCS for batch 1397331	Method: SW846 8260B DOE-AL
Batch ID: 1397331	Project: QC
Run Date: 06/19/2014 19:20	SOP Ref: GL-OA-E-038
Prep Date: 06/19/2014 19:20	Dilution: 1
Data File: 061914\AK431SN.D	Purge Vol: 5 mL
	Analyst: JEB
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		55.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.2	ug/L	0.300	1.00
75-00-3	Chloroethane		43.6	ug/L	0.300	1.00
67-66-3	Chloroform		49.7	ug/L	0.300	1.00
74-87-3	Chloromethane		39.6	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		60.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		49.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		39.5	ug/L	0.300	1.00
60-29-7	Ethyl ether		44.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		49.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		54.4	ug/L	0.300	1.00
74-88-4	Iodomethane		239	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		41.9	ug/L	3.00	10.0
91-20-3	Naphthalene		52.1	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.6	ug/L	0.300	1.00
108-88-3	Toluene		48.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		48.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		264	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		48.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		53.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		97.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5250	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		50.1	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		48.3	ug/L	0.300	1.00
95-47-6	o-Xylene		50.2	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		51.2	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		49.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		52.0	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203112649		
Client Sample:	QC for batch 1397331	Client:	ARSL004
Client ID:	LCS for batch 1397331	Method:	SW846 8260B DOE-AL
Batch ID:	1397331	Inst:	VOAA.I
Run Date:	06/19/2014 19:20	Analyst:	JEB
Prep Date:	06/19/2014 19:20		
Data File:	061914\AK431SN.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		47.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		54.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.7	50.0	ug/L	103	(78%-124%)
Bromofluorobenzene	50.1	50.0	ug/L	100	(80%-120%)
Toluene-d8	50.6	50.0	ug/L	101	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3518	Matrix: WATER
Lab Sample ID: 1203112650	
Client Sample: QC for batch 1397331	Client: ARSL004
Client ID: LCS for batch 1397331	Method: SW846 8260B DOE-AL
Batch ID: 1397331	Project: QC
Run Date: 06/19/2014 20:09	SOP Ref: GL-OA-E-038
Prep Date: 06/19/2014 20:09	Dilution: 1
Data File: 061914\AK433SN.D	Purge Vol: 5 mL
	Analyst: JEB
	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		41.4	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		183	ug/L	1.50	5.00
107-13-1	Acrylonitrile		198	ug/L	1.00	5.00
107-05-1	Allyl chloride		183	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:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203112650		
Client Sample:	QC for batch 1397331	Client:	ARSL004
Client ID:	LCS for batch 1397331	Method:	SW846 8260B DOE-AL
Batch ID:	1397331	Inst:	VOAA.I
Run Date:	06/19/2014 20:09	Analyst:	JEB
Prep Date:	06/19/2014 20:09	Purge Vol:	5 mL
Data File:	061914\AK433SN.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		208	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		2130	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		210	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		217	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		213	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		181	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:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203112650		
Client Sample:	QC for batch 1397331	Client:	ARSL004
Client ID:	LCS for batch 1397331	Method:	SW846 8260B DOE-AL
Batch ID:	1397331	Inst:	VOAA.I
Run Date:	06/19/2014 20:09	Analyst:	JEB
Prep Date:	06/19/2014 20:09		
Data File:	061914\AK433SN.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		51.9	50.0	ug/L	104	(78%-124%)
Bromofluorobenzene		50.2	50.0	ug/L	100	(80%-120%)
Toluene-d8		50.1	50.0	ug/L	100	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 25-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260B DOE-AL	Matrix Type: Liquid	Client Code: ESHL, SNLS
Batch ID: 1397331	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350254,350261(2014-3511),350313,350326(2014-3518) Application Issues: Failed Recovery for MS/PS Failed Recovery for LCS/LCSD Failed Recovery for MSD/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The MS 1203112645 did not meet spike recovery limits for 1,2-Dibromo-3-chloropropane at 130.6%. 2. The MS 1203112646 % MSD 1203112648 did not meet spike recovery limits for Trichlorotrifluoroethane. Trichlorotrifluoroethane recovered at 69% in the matrix spike and 68.3% in the matrix spike duplicate. 3. The LCS 1203112650 did not meet spike recovery limits for Trichlorotrifluoroethane at 72.5%.		1. The MS did not meet recovery requirements. The associated MSD recovered within the acceptance limits near the upper end of the acceptance limits. Matrix interference has been demonstrated. 2. The spike and spike duplicate did not meet the acceptance limits. The results between the spike and spike duplicate were similar. Matrix interference has been demonstrated. 3. The LCS 1203112650 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.	

Originator's Name:

John Bell, Jr. 25-JUN-14

Data Validator/Group Leader:

Kelle Bellamy 03-JUL-14

Semi-Volatile Analysis

**Semi-Volatile Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3518**

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:	1394991
Prep Batch Number:	1394990

Sample Analysis

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

Sample ID	Client ID
350326003	CALA-14-79456
1203106718	Method Blank (MB)
1203106719	Laboratory Control Sample (LCS)
1203107061	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-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

The 1203107061 (LCSD) failed surrogate recovery. Please see the QC Summary/Spike Recovery Report for specific failures. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported.

Laboratory Control Sample (LCS) Recovery

The 1203106719 (LCS) recovered Aniline at 109% (limits are 35%-107%). Because the recovery was biased high and Aniline was not detected in any of the associated samples, the data are reported.

Laboratory Control Sample Duplicate (LCSD) Recovery

The 1203107061 (LCSD) failed multiple spike recoveries. Please see the QC Summary/Spike Recovery Report for specific failures. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported.

LCS/LCSD Relative Percent Difference (RPD) Statement

Multiple RPD values between the 1203106719 (LCS) and 1203107061 (LCSD) were not within the 0-30% acceptance limits. Please see the QC Summary/Spike Recovery Report for specific failures. These RPD failures are attributed to the large difference in the recovery values between analyte pairs in the LCS and LCSD. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported.

QC Sample Designation

A matrix spike/matrix spike duplicate pair was not extracted and analyzed with this batch for this SDG.

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 report 1304172 was generated for the samples in this batch 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 1203106718 (MB) and 350326003 (CALA-14-79456) 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
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MSD3.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP7890A/HP5975C	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)
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Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3518 GEL Work Order: 350326


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- E Concentration of the target analyte exceeds the instrument calibration range
- 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: 

Name: Barbara Bailey

Date: 25 JUN 2014

Title: Data Validator

Sample Data Summary

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

SDG Number: 2014-3518

Lab Sample ID: 350326003

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1394991

Inst: MSD3.I

Dilution: 1

Run Date: 06/12/2014 17:55

Analyst: JLD1

Inj. Vol: 1 uL

Prep Date: 06/11/2014 13:50

Aliquot: 960 mL

Final Volume: 1 mL

Data File: s061214a.B\s3f1219.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.4	ug/L	3.13	10.4
120-82-1	1,2,4-Trichlorobenzene	U	10.4	ug/L	3.13	10.4
95-50-1	1,2-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
122-66-7	Azobenzene	U	10.4	ug/L	3.13	10.4
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
106-46-7	1,4-Dichlorobenzene	U	10.4	ug/L	3.13	10.4
123-91-1	1,4-Dioxane	U	10.4	ug/L	3.13	10.4
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.4	ug/L	3.13	10.4
95-95-4	2,4,5-Trichlorophenol	U	10.4	ug/L	3.13	10.4
88-06-2	2,4,6-Trichlorophenol	U	10.4	ug/L	3.13	10.4
120-83-2	2,4-Dichlorophenol	U	10.4	ug/L	3.13	10.4
105-67-9	2,4-Dimethylphenol	U	10.4	ug/L	3.13	10.4
51-28-5	2,4-Dinitrophenol	U	20.8	ug/L	5.21	20.8
121-14-2	2,4-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
606-20-2	2,6-Dinitrotoluene	U	10.4	ug/L	3.13	10.4
91-58-7	2-Chloronaphthalene	U	1.04	ug/L	0.427	1.04
95-57-8	2-Chlorophenol	U	10.4	ug/L	3.13	10.4
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.4	ug/L	3.13	10.4
88-75-5	2-Nitrophenol	U	10.4	ug/L	3.13	10.4
91-94-1	3,3'-Dichlorobenzidine	U	10.4	ug/L	3.13	10.4
101-55-3	4-Bromophenylphenylether	U	10.4	ug/L	3.13	10.4
59-50-7	Parachlorometa cresol	U	10.4	ug/L	3.13	10.4
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.4	ug/L	3.44	10.4
7005-72-3	4-Chlorophenylphenylether	U	10.4	ug/L	3.13	10.4
100-02-7	4-Nitrophenol	U	10.4	ug/L	3.13	10.4
62-53-3	Aniline	U	10.4	ug/L	4.38	10.4
1912-24-9	Atrazine	U	10.4	ug/L	3.13	10.4
92-87-5	Benzidine	U	10.4	ug/L	4.06	10.4
65-85-0	Benzoic acid	U	20.8	ug/L	6.25	20.8
100-51-6	Benzyl alcohol	U	10.4	ug/L	3.13	10.4
85-68-7	Butylbenzylphthalate	U	10.4	ug/L	3.13	10.4
84-74-2	Di-n-butylphthalate	U	10.4	ug/L	3.13	10.4
117-84-0	Di-n-octylphthalate	U	10.4	ug/L	3.13	10.4
132-64-9	Dibenzofuran	U	10.4	ug/L	3.13	10.4
84-66-2	Diethylphthalate	U	10.4	ug/L	3.13	10.4
131-11-3	Dimethylphthalate	U	10.4	ug/L	3.13	10.4
88-85-7	Dinoseb	U	10.4	ug/L	3.13	10.4

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

Page 2 of 2

SDG Number: 2014-3518

Lab Sample ID: 350326003

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1394991

Inst: MSD3.I

Dilution: 1

Run Date: 06/12/2014 17:55

Analyst: JLD1

Inj. Vol: 1 uL

Prep Date: 06/11/2014 13:50

Aliquot: 960 mL

Final Volume: 1 mL

Data File: s061214a.B\s3f1219.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	U	10.4	ug/L	3.13	10.4
87-68-3	Hexachlorobutadiene	U	10.4	ug/L	3.13	10.4
77-47-4	Hexachlorocyclopentadiene	U	10.4	ug/L	3.13	10.4
67-72-1	Hexachloroethane	U	10.4	ug/L	3.13	10.4
78-59-1	Isophorone	U	10.4	ug/L	3.65	10.4
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.4	ug/L	3.13	10.4
924-16-3	N-Nitrosodi-n-butylamine	U	10.4	ug/L	3.13	10.4
55-18-5	N-Nitrosodiethylamine	U	10.4	ug/L	3.13	10.4
621-64-7	N-Nitrosodi--n-propylamine	U	10.4	ug/L	3.13	10.4
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.4	ug/L	3.13	10.4
98-95-3	Nitrobenzene	U	10.4	ug/L	3.13	10.4
608-93-5	Pentachlorobenzene	U	10.4	ug/L	3.13	10.4
108-95-2	Phenol	U	10.4	ug/L	3.13	10.4
110-86-1	Pyridine	U	10.4	ug/L	3.13	10.4
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.4	ug/L	3.13	10.4
111-91-1	bis(2-Chloroethoxy)methane	U	10.4	ug/L	3.13	10.4
111-44-4	bis(2-Chloroethyl) ether	U	10.4	ug/L	3.13	10.4
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.4	ug/L	3.13	10.4
65794-96-9	m,p-Cresols	U	10.4	ug/L	3.85	10.4
99-09-2	3-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.4	ug/L	3.13	10.4
88-74-4	2-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.4	ug/L	3.13	10.4
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	102	104	ug/L 98.1	(26%-129%)
2-Fluorobiphenyl	40.6	52.1	ug/L 78.0	(32%-102%)
2-Fluorophenol	53.9	104	ug/L 51.7	(10%-78%)
Nitrobenzene-d5	43.6	52.1	ug/L 83.7	(36%-125%)
Phenol-d5	34.4	104	ug/L 33.0	(10%-104%)
p-Terphenyl-d14	48.2	52.1	ug/L 92.6	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000067-66-3	Trichloromethane	1.918	54.8	ug/L	95	NJ
	unknown	10.321	6.5	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203106718	MB for batch 1394990	53	34	85	64	105	94
1203106719	LCS for batch 1394990	53	34	87	73	104	94
1203107061	LCSD for batch 1394990	20	15	14 *	12 *	19 *	23 *
350326003	CALA-14-79456	52	33	84	78	98	93

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

Page 1 of 6

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394990

Matrix: WATER

Lab Sample ID 1203106719

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:28

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1394990

Inj. Vol: 1 uL

Batch ID: 1394991

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	35.3	71	18-75
110-86-1	LCS Pyridine	50.0	0.0	42.0	84	11-88
62-53-3	LCS Aniline	50.0	0.0	54.7	109 *	35-107
108-95-2	LCS Phenol	50.0	0.0	18.0	36	13-77
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	47.8	96	35-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	41.7	83	39-99
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	29.8	60	25-100
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	31.1	62	24-88
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	30.3	61	27-87
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	37.9	76	23-120
100-51-6	LCS Benzyl alcohol	50.0	0.0	38.5	77	33-90
95-48-7	LCS o-Cresol	50.0	0.0	38.8	78	32-90
65794-96-9	LCS m,p-Cresols	50.0	0.0	39.7	79	28-100
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	45.0	90	39-113
67-72-1	LCS Hexachloroethane	50.0	0.0	27.7	55	20-85
98-95-3	LCS Nitrobenzene	50.0	0.0	46.9	94	41-119
78-59-1	LCS Isophorone	50.0	0.0	45.6	91	49-133
88-75-5	LCS 2-Nitrophenol	50.0	0.0	43.2	86	42-111
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	41.1	82	43-99
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	47.5	95	44-109
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	40.2	80	45-106
65-85-0	LCS Benzoic acid	100	0.0	37.6	38	10-81

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394990

Matrix: WATER

Lab Sample ID 1203106719

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:28

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1394990

Inj. Vol: 1 uL

Batch ID: 1394991

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	52.3	105	50-122
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	26.9	54	19-92
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	42.3	85	46-111
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	28.2	56	15-72
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	45.1	90	41-109
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	43.7	87	41-111
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	37.7	75	36-98
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	51.5	103	44-117
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	58.1	116	45-124
131-11-3	LCS Dimethylphthalate	50.0	0.0	48.8	98	53-112
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	48.8	98	52-117
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	51.9	104	45-124
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	51.9	104	19-110
132-64-9	LCS Dibenzofuran	50.0	0.0	44.1	88	45-107
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	48.9	98	45-120
84-66-2	LCS Diethylphthalate	50.0	0.0	49.4	99	51-116
100-02-7	LCS 4-Nitrophenol	50.0	0.0	12.9	26	16-77
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	46.1	92	40-114
100-01-6	LCS 4-Nitroaniline p-Nitroaniline	50.0	0.0	61.8	124	38-133
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	48.3	97	34-114
122-39-4	LCS Diphenylamine	50.0	0.0	43.1	86	47-111
122-66-7	LCS Azobenzene 1,2-Diphenylhydrazine	50.0	0.0	43.3	87	40-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394990

Matrix: WATER

Lab Sample ID 1203106719

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:28

Dilution: 1

Analyst: JLD1

Prep Batch ID:1394990

Inj. Vol: 1 uL

Batch ID: 1394991

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	43.8	88	41-113
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	45.2	90	49-116
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	47.5	95	40-122
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	45.1	90	37-124
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	40.6	81	33-122
123-91-1	LCS 1,4-Dioxane	50.0	0.0	36.0	72	26-73
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	47.4	95	42-106
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	31.7	63	36-95
1912-24-9	LCS Atrazine	50.0	0.0	45.2	90	47-115
92-87-5	LCS Benzidine	100	0.0	83.4	83	10-124
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	42.4	85	31-113
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	29.2	58	26-92

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 6

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394990

Matrix: GROUND WATER

Lab Sample ID 1203107061

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:57

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1394990

Inj. Vol: 1 uL

Batch ID: 1394991

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	Acceptance RPD %	Acceptance Limits
62-75-9	LCSD N-Methyl-N-nitrosomethylam	50.0	0.0	23.8	48	18-75	39 *	0-30
110-86-1	LCSD Pyridine	50.0	0.0	45.7	91 *	11-88	8	0-30
62-53-3	LCSD Aniline	50.0	0.0	55.3	111 *	35-107	1	0-30
108-95-2	LCSD Phenol	50.0	0.0	7.73	15	13-77	80 *	0-30
111-44-4	LCSD bis(2-Chloroethyl) ether	50.0	0.0	8.37	17 *	35-111	140 *	0-30
95-57-8	LCSD 2-Chlorophenol	50.0	0.0	9.68	19 *	39-99	125 *	0-30
541-73-1	LCSD 1,3-Dichlorobenzene	50.0	0.0	0.00	0 *	25-100	200 *	0-30
106-46-7	LCSD 1,4-Dichlorobenzene	50.0	0.0	3.12	6 *	24-88	164 *	0-30
95-50-1	LCSD 1,2-Dichlorobenzene	50.0	0.0	3.15	6 *	27-87	162 *	0-30
108-60-1	LCSD bis(2-Chloro-1-methylethyl)et	50.0	0.0	5.59	11 *	23-120	149 *	0-30
100-51-6	LCSD Benzyl alcohol	50.0	0.0	23.7	47	33-90	48 *	0-30
95-48-7	LCSD o-Cresol	50.0	0.0	12.4	25 *	32-90	103 *	0-30
65794-96-9	LCSD m,p-Cresols	50.0	0.0	14.1	28	28-100	95 *	0-30
621-64-7	LCSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	8.35	17 *	39-113	137 *	0-30
67-72-1	LCSD Hexachloroethane	50.0	0.0	0.00	0 *	20-85	200 *	0-30
98-95-3	LCSD Nitrobenzene	50.0	0.0	7.49	15 *	41-119	145 *	0-30
78-59-1	LCSD Isophorone	50.0	0.0	8.82	18 *	49-133	135 *	0-30
88-75-5	LCSD 2-Nitrophenol	50.0	0.0	6.86	14 *	42-111	145 *	0-30
105-67-9	LCSD 2,4-Dimethylphenol	50.0	0.0	9.57	19 *	43-99	124 *	0-30
111-91-1	LCSD bis(2-Chloroethoxy)methane	50.0	0.0	9.29	19 *	44-109	135 *	0-30
120-83-2	LCSD 2,4-Dichlorophenol	50.0	0.0	7.22	14 *	45-106	139 *	0-30
65-85-0	LCSD Benzoic acid	100	0.0	13.0	13	10-81	97 *	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394990

Matrix: GROUND WATER

Lab Sample ID 1203107061

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:57

Dilution: 1

Analyst: JLD1

Prep Batch ID:1394990

Inj. Vol: 1 uL

Batch ID: 1394991

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	LCSD 4-Chloroaniline	50.0	0.0	50.2	100	50-122	4	0-30
87-68-3	LCSD Hexachlorobutadiene	50.0	0.0	0.00	0 *	19-92	200 *	0-30
59-50-7	LCSD Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	10.3	21 *	46-111	122 *	0-30
77-47-4	LCSD Hexachlorocyclopentadiene	50.0	0.0	3.26	7 *	15-72	159 *	0-30
88-06-2	LCSD 2,4,6-Trichlorophenol	50.0	0.0	8.03	16 *	41-109	139 *	0-30
95-95-4	LCSD 2,4,5-Trichlorophenol	50.0	0.0	7.91	16 *	41-111	139 *	0-30
91-58-7	LCSD 2-Chloronaphthalene	50.0	0.0	6.23	12 *	36-98	143 *	0-30
88-74-4	LCSD 2-Nitroaniline o-Nitroaniline	50.0	0.0	12.0	24 *	44-117	124 *	0-30
99-09-2	LCSD 3-Nitroaniline m-Nitroaniline	50.0	0.0	40.6	81	45-124	35 *	0-30
131-11-3	LCSD Dimethylphthalate	50.0	0.0	10.8	22 *	53-112	128 *	0-30
606-20-2	LCSD 2,6-Dinitrotoluene	50.0	0.0	9.39	19 *	52-117	135 *	0-30
121-14-2	LCSD 2,4-Dinitrotoluene	50.0	0.0	10.7	21 *	45-124	132 *	0-30
51-28-5	LCSD 2,4-Dinitrophenol	50.0	0.0	6.82	14 *	19-110	154 *	0-30
132-64-9	LCSD Dibenzofuran	50.0	0.0	8.23	16 *	45-107	137 *	0-30
58-90-2	LCSD 2,3,4,6-Tetrachlorophenol	50.0	0.0	8.81	18 *	45-120	139 *	0-30
84-66-2	LCSD Diethylphthalate	50.0	0.0	10.6	21 *	51-116	129 *	0-30
100-02-7	LCSD 4-Nitrophenol	50.0	0.0	7.81	16	16-77	49 *	0-30
7005-72-3	LCSD 4-Chlorophenylphenylether	50.0	0.0	9.02	18 *	40-114	135 *	0-30
100-01-6	LCSD 4-Nitroaniline p-Nitroaniline	50.0	0.0	29.1	58	38-133	72 *	0-30
534-52-1	LCSD 2-Methyl-4,6-dinitrophenol	50.0	0.0	7.85	16 *	34-114	144 *	0-30
122-39-4	LCSD Diphenylamine	50.0	0.0	8.43	17 *	47-111	135 *	0-30
122-66-7	LCSD Azobenzene 1,2-Diphenylhydrazine	50.0	0.0	8.47	17 *	40-112	134 *	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 6

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394990

Matrix: GROUND WATER

Lab Sample ID 1203107061

Instrument: MSD3.I

Analysis Date: 06/12/2014 16:57

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1394990

Inj. Vol: 1 uL

Batch ID: 1394991

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
101-55-3	LCSD 4-Bromophenylphenylether	50.0	0.0	8.42	17 *	41-113	135 *	0-30
84-74-2	LCSD Di-n-butylphthalate	50.0	0.0	10.3	21 *	49-116	125 *	0-30
85-68-7	LCSD Butylbenzylphthalate	50.0	0.0	9.77	20 *	40-122	132 *	0-30
117-81-7	LCSD bis(2-Ethylhexyl)phthalate	50.0	0.0	10.3	21 *	37-124	126 *	0-30
117-84-0	LCSD Di-n-octylphthalate	50.0	0.0	9.76	20 *	33-122	122 *	0-30
123-91-1	LCSD 1,4-Dioxane	50.0	0.0	23.1	46	26-73	44 *	0-30
930-55-2	LCSD N-Nitrosopyrrolidine	50.0	0.0	25.2	50	42-106	61 *	0-30
95-94-3	LCSD 1,2,4,5-Tetrachlorobenzene	50.0	0.0	5.07	10 *	36-95	145 *	0-30
1912-24-9	LCSD Atrazine	50.0	0.0	10.9	22 *	47-115	122 *	0-30
92-87-5	LCSD Benzidine	100	0.0	123	123	10-124	38 *	0-30
91-94-1	LCSD 3,3'-Dichlorobenzidine	50.0	0.0	9.38	19 *	31-113	128 *	0-30
120-82-1	LCSD 1,2,4-Trichlorobenzene	50.0	0.0	3.58	7 *	26-92	156 *	0-30

Method Blank Summary

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SDG Number:	2014-3518	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394990	Instrument ID:	MSD3.I	Data File:	s061214a.B\s3f1215.D
Lab Sample ID:	1203106718	Prep Date:	06/11/2014 13:50	Analyzed:	06/12/14 15:59
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 1394990	1203106719	s061214a.B\s3f1216.D	06/12/14	1628
02 LCSD for batch 1394990	1203107061	s061214a.B\s3f1217.D	06/12/14	1657
03 CALA-14-79456	350326003	s061214a.B\s3f1219.D	06/12/14	1755

Quality Control Data

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

SDG Number: 2014-3518

Lab Sample ID: 1203106718

Client Sample: QC for batch 1394990

Client ID: MB for batch 1394990

Batch ID: 1394991

Run Date: 06/12/2014 15:59

Prep Date: 06/11/2014 13:50

Data File: s061214a.B\s3f1215.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 1000 mL
Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
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
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	10.0	ug/L	3.00	10.0
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**

Page 2 of 2

SDG Number: 2014-3518

Lab Sample ID: 1203106718

Client Sample: QC for batch 1394990

Client ID: MB for batch 1394990

Batch ID: 1394991

Run Date: 06/12/2014 15:59

Prep Date: 06/11/2014 13:50

Data File: s061214a.B\s3f1215.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD3.I

Analyst: JLD1

Aliquot: 1000 mL

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	U	10.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
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
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	105	100	ug/L	105	(26%-129%)
2-Fluorobiphenyl	31.9	50.0	ug/L	63.9	(32%-102%)
2-Fluorophenol	53.3	100	ug/L	53.3	(10%-78%)
Nitrobenzene-d5	42.3	50.0	ug/L	84.7	(36%-125%)
Phenol-d5	33.5	100	ug/L	33.5	(10%-104%)
p-Terphenyl-d14	46.9	50.0	ug/L	93.7	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000067-66-3	Trichloromethane	1.918	44.4	ug/L	95	NJ

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

SDG Number: 2014-3518

Lab Sample ID: 1203106719

Client Sample: QC for batch 1394990

Client ID: LCS for batch 1394990

Batch ID: 1394991

Run Date: 06/12/2014 16:28

Prep Date: 06/11/2014 13:50

Data File: s061214a.B\s3f1216.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD3.I

Analyst: JLD1

Aliquot: 1000 mL

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		31.7	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		29.2	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		30.3	ug/L	3.00	10.0
122-66-7	Azobenzene		43.3	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		29.8	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		31.1	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		36.0	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol		48.9	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		43.7	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		45.1	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		40.2	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		41.1	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		51.9	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		51.9	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		48.8	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		37.7	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		41.7	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		48.3	ug/L	3.00	10.0
88-75-5	2-Nitrophenol		43.2	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		42.4	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		43.8	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		42.3	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		52.3	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		46.1	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		12.9	ug/L	3.00	10.0
62-53-3	Aniline		54.7	ug/L	4.20	10.0
1912-24-9	Atrazine		45.2	ug/L	3.00	10.0
92-87-5	Benzidine		83.4	ug/L	3.90	10.0
65-85-0	Benzoic acid		37.6	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		38.5	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		47.5	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate		45.2	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		40.6	ug/L	3.00	10.0
132-64-9	Dibenzofuran		44.1	ug/L	3.00	10.0
84-66-2	Diethylphthalate		49.4	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		48.8	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**

Page 2 of 2

SDG Number: 2014-3518

Lab Sample ID: 1203106719

Client Sample: QC for batch 1394990

Client ID: LCS for batch 1394990

Batch ID: 1394991

Run Date: 06/12/2014 16:28

Prep Date: 06/11/2014 13:50

Data File: s061214a.B\s3f1216.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 1000 mL
Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		43.1	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		26.9	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		28.2	ug/L	3.00	10.0
67-72-1	Hexachloroethane		27.7	ug/L	3.00	10.0
78-59-1	Isophorone		45.6	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		35.3	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		45.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		47.4	ug/L	3.00	10.0
98-95-3	Nitrobenzene		46.9	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol		18.0	ug/L	3.00	10.0
110-86-1	Pyridine		42.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		37.9	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		47.5	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		47.8	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		45.1	ug/L	3.00	10.0
65794-96-9	m,p-Cresols		39.7	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		58.1	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		38.8	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		51.5	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		61.8	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	104	100	ug/L	104	(26%-129%)
2-Fluorobiphenyl	36.6	50.0	ug/L	73.3	(32%-102%)
2-Fluorophenol	53.5	100	ug/L	53.5	(10%-78%)
Nitrobenzene-d5	43.4	50.0	ug/L	86.7	(36%-125%)
Phenol-d5	34.3	100	ug/L	34.3	(10%-104%)
p-Terphenyl-d14	47.1	50.0	ug/L	94.2	(34%-135%)

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

SDG Number: 2014-3518

Lab Sample ID: 1203107061

Client Sample: QC for batch 1394990

Client ID: LCSD for batch 1394990

Batch ID: 1394991

Run Date: 06/12/2014 16:57

Prep Date: 06/11/2014 13:50

Data File: s061214a.B\s3f1217.D

Matrix: GROUND WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 1000 mL
Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	J	5.07	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	J	3.58	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	J	3.15	ug/L	3.00	10.0
122-66-7	Azobenzene	J	8.47	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	J	3.12	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		23.1	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol	J	8.81	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	J	7.91	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	J	8.03	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	J	7.22	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	J	9.57	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	J	6.82	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		10.7	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	J	9.39	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		6.23	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	J	9.68	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	J	7.85	ug/L	3.00	10.0
88-75-5	2-Nitrophenol	J	6.86	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	J	9.38	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	J	8.42	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		10.3	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		50.2	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	J	9.02	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	J	7.81	ug/L	3.00	10.0
62-53-3	Aniline		55.3	ug/L	4.20	10.0
1912-24-9	Atrazine		10.9	ug/L	3.00	10.0
92-87-5	Benzidine	E	123	ug/L	3.90	10.0
65-85-0	Benzoic acid	J	13.0	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		23.7	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	J	9.77	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate		10.3	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	J	9.76	ug/L	3.00	10.0
132-64-9	Dibenzofuran	J	8.23	ug/L	3.00	10.0
84-66-2	Diethylphthalate		10.6	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		10.8	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**

Page 2 of 2

SDG Number: 2014-3518	Matrix: GROUND WATER
Lab Sample ID: 1203107061	
Client Sample: QC for batch 1394990	Client: ARSL004
Client ID: LCSD for batch 1394990	Method: SW846 3510C/8270D
Batch ID: 1394991	Inst: MSD3.I
Run Date: 06/12/2014 16:57	Analyst: JLD1
Prep Date: 06/11/2014 13:50	Aliquot: 1000 mL
Data File: s061214a.B\s3f1217.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	J	8.43	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	J	3.26	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
78-59-1	Isophorone	J	8.82	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		23.8	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	J	8.35	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		25.2	ug/L	3.00	10.0
98-95-3	Nitrobenzene	J	7.49	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol	J	7.73	ug/L	3.00	10.0
110-86-1	Pyridine		45.7	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	J	5.59	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	J	9.29	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	J	8.37	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		10.3	ug/L	3.00	10.0
65794-96-9	m,p-Cresols		14.1	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		40.6	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		12.4	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		12.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		29.1	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
2,4,6-Tribromophenol	18.6	100	ug/L	18.6	*	(26%-129%)
2-Fluorobiphenyl	10.0	50.0	ug/L	11.5	*	(32%-102%)
2-Fluorophenol	19.9	100	ug/L	19.9		(10%-78%)
Nitrobenzene-d5	10.0	50.0	ug/L	14.3	*	(36%-125%)
Phenol-d5	14.5	100	ug/L	14.5		(10%-104%)
p-Terphenyl-d14	11.7	50.0	ug/L	23.3	*	(34%-135%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 13-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: SEMIVOA GC/MS	Test / Method: SW846 3510C/8270D	Matrix Type: Liquid	Client Code: ARSL (ESHL)
Batch ID: 1394991	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350260(2014-3510),350326(2014-3518) Application Issues: Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD Failed Yield for Surrogates			
Specification and Requirements Exception Description:		DER Disposition:	
1. The LCSD(1203107061) failed surrogate recovery. Please see the QC Summary/Spike Recovery Report for specific failures. 2. The LCS(1203106719) recovered Aniline at 109% (limits are 35%-107%). 3. The LCSD(1203107061) failed multiple spike recoveries. Please see the QC Summary/Spike Recovery Report for specific failures. 4. Multiple RPD values between the LCS(1203106719) and LCSD(1203107061) were not within the 0-30% acceptance limits. Please see the QC Summary/Spike Recovery Report for specific failures.		1. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported. 2. Because the recovery was biased high and Aniline was not detected in any of the associated samples, the data are reported. 3. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported. 4. These RPD failures are attributed to the large difference in the recovery values between analyte pairs in the LCS and LCSD. Since there was insufficient sample remaining to perform a re-extraction, the results from this extraction are reported.	

Originator's Name:

Jennifer Dunagan Jones13-JUN-14

Data Validator/Group Leader:

Herbert Maier 13-JUN-14

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-3518

Method/Analysis Information

Procedure: Polynuclear Aromatic Hydrocarbons
Analytical Method: SW846 8310
Prep Method: SW846 3510C
Analytical Batch Number: 1394823
Prep Batch Number: 1394822

Sample Analysis

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

Sample ID	Client ID
350326002	CALA-14-79456
1203106364	Method Blank (MB)
1203106365	350260002(CAPU-14-79427) Matrix Spike (MS)
1203106366	Laboratory Control Sample (LCS)
1203106367	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 (1203106364) analyzed in this analytical batch had a low level detection of Benzo(k)fluoranthene. Benzo(k)fluoranthene was not detected in the associated samples. The LCS (1203106366), LCSD (1203106367), and MS (1203106365) are 'B' qualified. The data are reported with the appropriate DER.

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

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPDs between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Client sample 350260002 (CAPU-14-79427) from SDG 2014-3510 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

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 1306748 was generated for this SDG.

The MB (1203106364) analyzed in this analytical batch had a low level detection of Benzo(k)fluoranthene. Benzo(k)fluoranthene was not detected in the associated samples. The LCS (1203106366), LCSD (1203106367), and MS (1203106365) are 'B' qualified. 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 columns:

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: 2014-3518 GEL Work Order: 350326

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 01 JUL 2014

Title: Group Leader

Roadmap for ARSL 2014-3518 HPLC_PAH

This roadmap was analyzed by cww on 06-20-2014, 16:43.

This roadmap was reviewed by map on 06-30-2014, 14:50.

This roadmap was packaged by map on 07-01-2014, 12:08.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1252.d	350326002	13-JUN-2014	20:13	2014-3518.sub	CALA-14-79456	1	1394823	<input type="text"/>

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1247A.d	1203106364	mb	13-JUN-2014	16:42	2014-3518.sub	PAHBLK01	1	1394823	<input type="text"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1248A.d	1203106366	lcs	13-JUN-2014	17:24	2014-3518.sub	PAHBLK01LCS	1	1394823	<input type="text" value="Pass"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1249A.d	1203106367	lcsd	13-JUN-2014	18:07	2014-3518.sub	PAHBLK01LCSD	1	1394823	<input type="text" value="Pass"/>

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3518
Lab Sample ID: 350326002

Client ID: CALA-14-79456
Batch ID: 1394823
Run Date: 06/13/2014 20:13
Prep Date: 06/11/2014 06:20
Data File: ph5f1252.d

Date Collected: 06/06/2014 09:55
Date Received: 06/10/2014 09:05
Client: ARSL004
Method: SW846 8310
Inst: HPLCE.I
Analyst: CWW
Aliquot: 950 mL
Column: C-18, DAD/FLD

Matrix: W

Project: ESHL00714
SOP Ref: GL-OA-E-030
Dilution: 1
Inj. Vol: 20 uL
Final Volume: 1 mL
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	122	263	46.2	(21% -96%)

QC Summary

PAH by HPLC
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Matrix Type: LIQUID

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

Sample ID	Client ID	DFBF %REC
1203106364	MB for batch 1394822	60
1203106366	LCS for batch 1394822	50
1203106367	LCSD for batch 1394822	55
1203106365	CAPU-14-79427MS	41
350326002	CALA-14-79456	46

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

Page 1 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394822

Matrix: GROUND WATER

Lab Sample ID 1203106366

Instrument: HPLCE.I

Analysis Date: 06/13/2014 17:24

Dilution: 1

Analyst: CWW

Prep Batch ID:1394822

Inj. Vol: 20 uL

Batch ID: 1394823

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	31.7	63	54-108
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	37.5	75	50-91
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	34.8	70	55-96
208-96-8	LCS Acenaphthylene	50.0	0.0	38.4	77	52-100
83-32-9	LCS Acenaphthene	50.0	0.0	40.6	81	53-107
86-73-7	LCS Fluorene	50.0	0.0	41.7	83	62-130
85-01-8	LCS Phenanthrene	50.0	0.0	42.6	85	69-130
120-12-7	LCS Anthracene	50.0	0.0	44.5	89	70-130
206-44-0	LCS Fluoranthene	5.00	0.0	3.96	79	70-130
129-00-0	LCS Pyrene	5.00	0.0	4.25	85	70-130
56-55-3	LCS Benzo(a)anthracene	5.00	0.0	4.24	85	70-130
218-01-9	LCS Chrysene	5.00	0.0	4.39	88	70-130
205-99-2	LCS Benzo(b)fluoranthene	5.00	0.0	4.07	81	70-130
207-08-9	LCS Benzo(k)fluoranthene	2.50	0.0	2.11	85	70-130
50-32-8	LCS Benzo(a)pyrene	5.00	0.0	4.10	82	70-130
193-39-5	LCS Indeno(1,2,3-cd)pyrene	5.00	0.0	3.49	70	57-114
53-70-3	LCS Dibenzo(a,h)anthracene	5.00	0.0	2.64	53	30-118
191-24-2	LCS Benzo(ghi)perylene	5.00	0.0	2.72	54	42-115

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394822

Matrix: GROUND WATER

Lab Sample ID 1203106367

Instrument: HPLCE.I

Analysis Date: 06/13/2014 18:07

Dilution: 1

Analyst: CWW

Prep Batch ID: 1394822

Inj. Vol: 20 uL

Batch ID: 1394823

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	31.6	63	54-108	0	0-26
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	37.3	75	50-91	1	0-20
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	35.4	71	55-96	2	0-20
208-96-8	LCSD Acenaphthylene	50.0	0.0	40.6	81	52-100	6	0-20
83-32-9	LCSD Acenaphthene	50.0	0.0	42.8	86	53-107	5	0-20
86-73-7	LCSD Fluorene	50.0	0.0	43.7	87	62-130	5	0-20
85-01-8	LCSD Phenanthrene	50.0	0.0	44.2	88	69-130	4	0-20
120-12-7	LCSD Anthracene	50.0	0.0	46.5	93	70-130	4	0-20
206-44-0	LCSD Fluoranthene	5.00	0.0	4.43	89	70-130	11	0-20
129-00-0	LCSD Pyrene	5.00	0.0	4.48	90	70-130	5	0-20
56-55-3	LCSD Benzo(a)anthracene	5.00	0.0	4.56	91	70-130	7	0-20
218-01-9	LCSD Chrysene	5.00	0.0	4.61	92	70-130	5	0-20
205-99-2	LCSD Benzo(b)fluoranthene	5.00	0.0	4.33	87	70-130	6	0-20
207-08-9	LCSD Benzo(k)fluoranthene	2.50	0.0	2.30	92	70-130	8	0-20
50-32-8	LCSD Benzo(a)pyrene	5.00	0.0	4.42	88	70-130	8	0-20
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	5.00	0.0	3.75	75	57-114	7	0-20
53-70-3	LCSD Dibenzo(a,h)anthracene	5.00	0.0	2.73	55	30-118	4	0-20
191-24-2	LCSD Benzo(ghi)perylene	5.00	0.0	2.80	56	42-115	3	0-20

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Sample Type: Matrix Spike

Client ID: CAPU-14-79427MS

Matrix: W

Lab Sample ID 1203106365

Instrument: HPLCE.I

Analysis Date: 06/13/2014 19:31

Dilution: 1

Analyst: CWW

Prep Batch ID: 1394822

Inj. Vol: 20 uL

Batch ID: 1394823

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	MS	Naphthalene	52.1	0.00	U	27.8	53	32-104
91-57-6	MS	2-Methylnaphthalene	52.1	0.00	U	33.1	63	56-130
90-12-0	MS	1-Methylnaphthalene	52.1	0.00	U	29.7	57	46-130
208-96-8	MS	Acenaphthylene	52.1	0.00	U	32.9	63	26-121
83-32-9	MS	Acenaphthene	52.1	0.00	U	36.2	70	27-118
86-73-7	MS	Fluorene	52.1	0.00	U	41.7	80	29-123
85-01-8	MS	Phenanthrene	52.1	0.00	U	43.6	84	35-126
120-12-7	MS	Anthracene	52.1	0.00	U	46.8	90	36-122
206-44-0	MS	Fluoranthene	5.21	0.00	U	4.42	85	32-134
129-00-0	MS	Pyrene	5.21	0.00	U	4.50	86	32-134
56-55-3	MS	Benzo(a)anthracene	5.21	0.00	U	4.50	86	35-129
218-01-9	MS	Chrysene	5.21	0.00	U	4.71	90	25-141
205-99-2	MS	Benzo(b)fluoranthene	5.21	0.00	U	3.91	75	29-133
207-08-9	MS	Benzo(k)fluoranthene	2.60	0.00	U	2.06	79	28-134
50-32-8	MS	Benzo(a)pyrene	5.21	0.00	U	4.05	78	25-135
193-39-5	MS	Indeno(1,2,3-cd)pyrene	5.21	0.00	U	3.38	65	25-135
53-70-3	MS	Dibenzo(a,h)anthracene	5.21	0.00	U	3.24	62	25-133
191-24-2	MS	Benzo(ghi)perylene	5.21	0.00	U	2.89	55	27-140

Method Blank Summary

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SDG Number:	2014-3518	Client:	ARSL004	Matrix:	GROUND WATER
Client ID:	MB for batch 1394822	Instrument ID:	HPLCE.I	Data File:	ph5f1247.d
Lab Sample ID:	1203106364	Prep Date:	06/11/2014 06:20	Analyzed:	06/13/14 16:42
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 1394822	1203106366	ph5f1248.d	06/13/14	1724
02 LCSD for batch 1394822	1203106367	ph5f1249.d	06/13/14	1807
03 CAPU-14-79427MS	1203106365	ph5f1251.d	06/13/14	1931
04 CALA-14-79456	350326002	ph5f1252.d	06/13/14	2013

QC Data

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3518		Matrix:	GROUND WATER
Lab Sample ID: 1203106364			
Client Sample: QC for batch 1394822	Client: ARSL004	Project:	QC
Client ID: MB for batch 1394822	Method: SW846 8310	SOP Ref:	GL-OA-E-030
Batch ID: 1394823	Inst: HPLCE.I	Dilution:	1
Run Date: 06/13/2014 16:42	Analyst: CWW	Inj. Vol:	20 uL
Prep Date: 06/11/2014 06:20	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: ph5f1247.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	J	0.012	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	151	250	60.3	(21%-96%)

**PAH by HPLC
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	GROUND WATER
Lab Sample ID:	1203106366		
Client Sample:	QC for batch 1394822	Client:	ARSL004
Client ID:	LCS for batch 1394822	Method:	SW846 8310
Batch ID:	1394823	Inst:	HPLCE.I
Run Date:	06/13/2014 17:24	Analyst:	CWW
Prep Date:	06/11/2014 06:20	Aliquot:	1000 mL
Data File:	ph5f1248.d	Column:	C-18, DAD/FLD
		Project:	QC
		SOP Ref:	GL-OA-E-030
		Dilution:	1
		Inj. Vol:	20 uL
		Final Volume:	1 mL
		Level:	LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		34.8	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		37.5	ug/L	0.150	0.500
83-32-9	Acenaphthene		40.6	ug/L	0.150	0.500
208-96-8	Acenaphthylene		38.4	ug/L	0.150	0.500
120-12-7	Anthracene		44.5	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.24	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.10	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.07	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.72	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	B	2.11	ug/L	0.008	0.025
218-01-9	Chrysene		4.39	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.64	ug/L	0.016	0.050
206-44-0	Fluoranthene		3.96	ug/L	0.016	0.050
86-73-7	Fluorene		41.7	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.49	ug/L	0.016	0.050
91-20-3	Naphthalene		31.7	ug/L	0.150	0.500
85-01-8	Phenanthrene		42.6	ug/L	0.182	0.500
129-00-0	Pyrene		4.25	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	124	250	49.7	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3518		Matrix:	GROUND WATER
Lab Sample ID: 1203106367			
Client Sample: QC for batch 1394822	Client: ARSL004	Project:	QC
Client ID: LCSD for batch 1394822	Method: SW846 8310	SOP Ref:	GL-OA-E-030
Batch ID: 1394823	Inst: HPLCE.I	Dilution:	1
Run Date: 06/13/2014 18:07	Analyst: CWW	Inj. Vol:	20 uL
Prep Date: 06/11/2014 06:20	Aliquot: 1000 mL	Final Volume:	1 mL
Data File: ph5f1249.d	Column: C-18, DAD/FLD	Level:	LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		35.4	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		37.3	ug/L	0.150	0.500
83-32-9	Acenaphthene		42.8	ug/L	0.150	0.500
208-96-8	Acenaphthylene		40.6	ug/L	0.150	0.500
120-12-7	Anthracene		46.5	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.56	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.42	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.33	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.80	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	B	2.30	ug/L	0.008	0.025
218-01-9	Chrysene		4.61	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.73	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.43	ug/L	0.016	0.050
86-73-7	Fluorene		43.7	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.75	ug/L	0.016	0.050
91-20-3	Naphthalene		31.6	ug/L	0.150	0.500
85-01-8	Phenanthrene		44.2	ug/L	0.182	0.500
129-00-0	Pyrene		4.48	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	138	250	55.0	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3518	Date Collected: 06/05/2014 12:09	Matrix: W
Lab Sample ID: 1203106365	Date Received: 06/07/2014 08:35	
Client Sample: QC for batch 1394822	Client: ARSL004	Project: QC
Client ID: CAPU-14-79427MS	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1394823	Inst: HPLCE.I	Dilution: 1
Run Date: 06/13/2014 19:31	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 06/11/2014 06:20	Aliquot: 960 mL	Final Volume: 1 mL
Data File: ph5f1251.d	Column: C-18, DAD/FLD	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		29.7	ug/L	0.227	0.521
91-57-6	2-Methylnaphthalene		33.1	ug/L	0.156	0.521
83-32-9	Acenaphthene		36.2	ug/L	0.156	0.521
208-96-8	Acenaphthylene		32.9	ug/L	0.156	0.521
120-12-7	Anthracene		46.8	ug/L	0.156	0.521
56-55-3	Benzo(a)anthracene		4.50	ug/L	0.0167	0.0521
50-32-8	Benzo(a)pyrene		4.05	ug/L	0.0167	0.0521
205-99-2	Benzo(b)fluoranthene		3.91	ug/L	0.0167	0.0521
191-24-2	Benzo(ghi)perylene		2.89	ug/L	0.0167	0.0521
207-08-9	Benzo(k)fluoranthene	B	2.06	ug/L	0.00833	0.026
218-01-9	Chrysene		4.71	ug/L	0.0167	0.0521
53-70-3	Dibenzo(a,h)anthracene		3.24	ug/L	0.0167	0.0521
206-44-0	Fluoranthene		4.42	ug/L	0.0167	0.0521
86-73-7	Fluorene		41.7	ug/L	0.156	0.521
193-39-5	Indeno(1,2,3-cd)pyrene		3.38	ug/L	0.0167	0.0521
91-20-3	Naphthalene		27.8	ug/L	0.156	0.521
85-01-8	Phenanthrene		43.6	ug/L	0.190	0.521
129-00-0	Pyrene		4.50	ug/L	0.0167	0.0521

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	108	260	41.4	(21%-96%)

Miscellaneous Data

DATA EXCEPTION REPORT

Mo.Day Yr. 20-JUN-14	Division: Federal	Quality Criteria: Others	Type: Process
Instrument Type: HPLC	Test / Method: SW846 8310	Matrix Type: Liquid	Client Code: ARSL004
Batch ID: 1394823	Sample Numbers: See below		
Potentially affected work order(s)(SDG): 350260(2014-3510),350326(2014-3518) Application Issues: Method Blank contamination			
Specification and Requirements Exception Description:		DER Disposition:	
1. The MB (1203106364) analyzed in this analytical batch had a low level detection of Benzo(k)fluoranthene.		1. Benzo(k)fluoranthene was not detected in the associated samples. The LCS (1203106366), LCSD (1203106367), and MS (1203106365) are 'B' qualified. The data are reported with the appropriate DER.	

Originator's Name:

Charles Wilson 20-JUN-14

Data Validator/Group Leader:

Michael Penny 30-JUN-14

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International, LLC (ARSL)
SDG 2014-3518**

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: 1396215

Prep Batch Number: 1396214

Sample Analysis

Sample ID	Client ID
350326006	CALA-14-79462
1203109912	Interference Check Sample (ICS)
1203109908	Method Blank (MB)
1203109909	Laboratory Control Sample (LCS)
1203109910	350417004(BDW08-14-79468) Matrix Spike (MS)
1203109911	350417004(BDW08-14-79468) 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 350417004 (BDW08-14-79468) from 2014-3526 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: 2014-3518 GEL Work Order: 350326

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: 

Name: Michael Penny

Date: 02 JUL 2014

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CALA-14-79462Date Received: 10-JUN-14GEL Job No (SDG): 2014-3518GEL Sample ID: 350326006Date Filtered: 19-JUN-14Injection 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	0.482	ug/L		1	22-JUN-14 18:02	per0622016a
	Perchlorate Isotope Ratio			2.93			1	22-JUN-14 18:02	per0622016a
14797-73-0	Perchlorate-101	.05	.2	0.492	ug/L		1	22-JUN-14 18:02	per0622016a
	Perchlorate-O(18)			0.508	ug/L		1	22-JUN-14 18:02	per0622016a

^ 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): 2014-3518

Extract Batch Code: 1396214

Date Filtered: 19-JUN-14

Matrix: WATER

Sample ID: 1203109909

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.19	ug/L	94.8		85 - 115
Perchlorate Isotope Ratio		2.97				-
Perchlorate-101	0.200	.191	ug/L	95.6		85 - 115
Perchlorate-O(18)		.482	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): 2014-3518

Extract Batch Code: 1396214

Date Extracted: 19-JUN-14

GEL MS/PS ID: 1203109910

Client ID: BDW08-14-79468

GEL MSD/PSD ID: 1203109911

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	0.259	ug/L	0.450	95.6	.453	96.7	.491	30	75 - 125
Perchlorate Isotope Ratio	0	2.96		2.93		2.9		1.18		-
Perchlorate-101	0.200	0.262	ug/L	0.459	98.6	.467	102	1.67	30	75 - 125
Perchlorate-O(18)	0	0.473	ug/L	0.476		.486		1.96		-

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

Quality Control Data

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 19-JUN-14GEL Job No (SDG): 2014-3518GEL Sample ID: 1203109908Date Filtered: 19-JUN-14Injection 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	22-JUN-14 17:24	per0622012a
	Perchlorate Isotope Ratio						1	22-JUN-14 17:24	per0622012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	22-JUN-14 17:24	per0622012a
	Perchlorate-O(18)			0.496	ug/L		1	22-JUN-14 17:24	per0622012a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 19-JUN-14GEL Job No (SDG): 2014-3518GEL Sample ID: 1203109909Date Filtered: 19-JUN-14Injection 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	22-JUN-14 17:33	per0622013a
	Perchlorate Isotope Ratio			2.97			1	22-JUN-14 17:33	per0622013a
14797-73-0	Perchlorate-101	.05	.2	0.191	ug/L	J	1	22-JUN-14 17:33	per0622013a
	Perchlorate-O(18)			0.482	ug/L		1	22-JUN-14 17:33	per0622013a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: GROUND WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2014-3518GEL Sample ID: 1203109912Date Filtered: 19-JUN-14Injection 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	0.186	ug/L	J	1	22-JUN-14 17:43	per0622014a
	Perchlorate Isotope Ratio			2.94			1	22-JUN-14 17:43	per0622014a
14797-73-0	Perchlorate-101	.05	.2	0.189	ug/L	J	1	22-JUN-14 17:43	per0622014a
	Perchlorate-O(18)			0.479	ug/L		1	22-JUN-14 17:43	per0622014a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

BDW08-14-79468MSDate Received: 11-JUN-14GEL Job No (SDG): 2014-3518GEL Sample ID: 1203109910Date Filtered: 19-JUN-14Injection 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	0.450	ug/L		1	22-JUN-14 19:17	per0622024a
	Perchlorate Isotope Ratio			2.93			1	22-JUN-14 19:17	per0622024a
14797-73-0	Perchlorate-101	.05	.2	0.459	ug/L		1	22-JUN-14 19:17	per0622024a
	Perchlorate-O(18)			0.476	ug/L		1	22-JUN-14 19:17	per0622024a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1396214Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

BDW08-14-79468MSDDate Received: 11-JUN-14GEL Job No (SDG): 2014-3518GEL Sample ID: 1203109911Date Filtered: 19-JUN-14Injection 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	0.453	ug/L		1	22-JUN-14 19:27	per0622025a
	Perchlorate Isotope Ratio			2.9			1	22-JUN-14 19:27	per0622025a
14797-73-0	Perchlorate-101	.05	.2	0.467	ug/L		1	22-JUN-14 19:27	per0622025a
	Perchlorate-O(18)			0.486	ug/L		1	22-JUN-14 19:27	per0622025a

^ 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 =

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

Pesticide Analysis

Case Narrative

Pesticide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3518

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:	1396056
Prep Batch Number:	1396055

Sample Analysis

Sample ID	Client ID
350326001	CALA-14-79456
350326007	CALA-14-79449
1203109515	Method Blank (MB)
1203109516	Laboratory Control Sample (LCS)
1203109517	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

Surrogate was not added to the RL check; however, the recoveries for both target analytes were within acceptable limits.

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

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

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries for this SDG were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD values between the MS and MSD were within the acceptance limits.

Technical Information:

Holding Time Specifications

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

Sample preservation

Sample 350326007 was preserved with HCl. 350326007 (CALA-14-79449).

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

The following DER was generated for this SDG: 1305259. 350326001 (CALA-14-79456) and 350326007 (CALA-14-79449).

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 value 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: 1394820

Prep Batch Number: 1394819

Sample Analysis

Sample ID	Client ID
350326004	CALA-14-79456
1203106356	Method Blank (MB)
1203106357	Laboratory Control Sample (LCS)
1203106358	350326004(CALA-14-79456) Matrix Spike (MS)
1203106360	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

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

The MS, 1203106358 (CALA-14-79456), recovered surrogate 4cmx at 187%. The limits are 36-106%. The parent sample 350326004 recovered the surrogate in a similar manner at 181%. A MSD was not extracted with this batch. The data are reported.

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

Sample 350326004 (CALA-14-79456) was selected for the matrix spike analysis.

Matrix Spike (MS) Recovery Statement

The MS, 1203106358 (CALA-14-79456), recovered Hexachlorobenzene at 0% on both columns. The limits are 50-150%. A MSD was not extracted with this batch. The failures indicate matrix interference. The LCS passed recovery for this analyte. The data are reported.

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

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

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 1303802 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
ECD7A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7673 Autosampler	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide I)
ECD7A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7673 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: 2014-3518 GEL Work Order: 350326

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:



Name: Cameron Bearden

Date: 07 JUL 2014

Title: Group Leader

Sample Data Summary

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3518

Lab Sample ID: 350326001

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:05

Matrix: W

Client ID: CALA-14-79456

Batch ID: 1396056

Run Date: 06/16/2014 16:06

Prep Date: 06/16/2014 13:45

Data File: 061614HE\E1f1612.D
061614HE\E1f1612.D

Client: ARSL004

Method: SW846 8011

Inst: ECD1A.I

Analyst: RXE1

Aliquot: 35 mL

Column: 1 ZB-50
2 ZB-XLB

Project: ESHL00714

SOP Ref: GL-OA-E-059

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 34 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0194	ug/L	0.00583	0.0194	1
106-93-4	1,2-Dibromoethane	U	0.0194	ug/L	0.00583	0.0194	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.58	3.57	ug/L	100	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3518
Lab Sample ID: 350326004

Client ID: CALA-14-79456
Batch ID: 1394820
Run Date: 06/11/2014 17:33
Prep Date: 06/11/2014 08:20
Data File: 061114.B\7f1119.D
061114.B\7f1119.D

Date Collected: 06/06/2014 09:55
Date Received: 06/10/2014 09:05
Client: ARSL004
Method: SW846 3535A/8081B
Inst: ECD7A.I
Analyst: LOF
Aliquot: 950 mL
Column: 1 CLPesticides
2 CLPesticides2

Matrix: W
Project: ESHL00714
SOP Ref: GL-OA-E-041
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0211	ug/L	0.00658	0.0211	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.861	1.05	ug/L	81.8	(36%-106%)
Decachlorobiphenyl	0.974	1.05	ug/L	92.5	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3518

Lab Sample ID: 350326007

Date Collected: 06/06/2014 09:55

Date Received: 06/10/2014 09:10

Matrix: W

Client ID: CALA-14-79449

Batch ID: 1396056

Run Date: 06/16/2014 16:27

Prep Date: 06/16/2014 13:45

Data File: 061614HE\E1f1613.D
061614HE\E1f1613.D

Client: ARSL004

Method: SW846 8011

Inst: ECD1A.I

Analyst: RXE1

Aliquot: 35 mL

Column: 1 ZB-50
2 ZB-XLB

Project: ESHL00714

SOP Ref: GL-OA-E-059

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 34.94 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.00599	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.00599	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.21	3.57	ug/L	118	(73%-135%)	

Quality Control Summary

Pesticide
Surrogate Recovery Report

Page 1 of 2

SDG Number: 2014-3518**Matrix Type: LIQUID**

Sample ID	Client ID	BFB 1	BFB 2
		%REC #	%REC #
1203109515	MB for batch 1396055	99	92
1203109516	LCS for batch 1396055	118	129
1203109517	LCSD for batch 1396055	111	122
350326001	CALA-14-79456	100	94
350326007	CALA-14-79449	118	112

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

Page 2 of 2

SDG Number: 2014-3518**Matrix Type: LIQUID**

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203106356	MB for batch 1394819	83	75	96	95
1203106357	LCS for batch 1394819	71	65	83	78
1203106360	LCSD for batch 1394819	85	76	97	93
350326004	CALA-14-79456	181 *	82	95	92
1203106358	CALA-14-79456MS	187 *	77	97	91

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

Page 1 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394819

Matrix: WATER

Lab Sample ID 1203106357

Instrument: ECD7A.I

Analysis Date: 06/11/2014 16:45

Dilution: 1

Analyst: LOF

Prep Batch ID:1394819

Inj. Vol: 1 uL

Batch ID: 1394820

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	0.0758	76	50-150

Pesticide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394819

Matrix: GROUND WATER

Lab Sample ID 1203106360

Instrument: ECD7A.I

Analysis Date: 06/11/2014 17:01

Dilution: 1

Analyst: LOF

Prep Batch ID:1394819

Inj. Vol: 1 uL

Batch ID: 1394820

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	0.0923	92	50-150	20	0-30

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Sample Type: Matrix Spike

Client ID: CALA-14-79456MS

Matrix: W

Lab Sample ID 1203106358

Instrument: ECD7A.I

Analysis Date: 06/11/2014 17:49

Dilution: 1

Analyst: LOF

Prep Batch ID:1394819

Inj. Vol: 1 uL

Batch ID: 1394820

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS Hexachlorobenzene	0.106	0.00 U	0.00	0 *	50-150

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396055

Matrix: WATER

Lab Sample ID 1203109516

Instrument: ECD1A.I

Analysis Date: 06/16/2014 15:24

Dilution: 1

Analyst: RXE1

Prep Batch ID: 1396055

Inj. Vol: 1 uL

Batch ID: 1396056

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	0.238	119	70-130
96-12-8	LCS 1,2-Dibromo-3-chloropropane	0.200	0.0	0.251	125	70-130

Pesticide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1396055

Matrix: WATER

Lab Sample ID 1203109517

Instrument: ECD1A.I

Analysis Date: 06/16/2014 15:45

Dilution: 1

Analyst: RXE1

Prep Batch ID:1396055

Inj. Vol: 1 uL

Batch ID: 1396056

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	0.220	110	70-130	8	0-20
96-12-8	LCSD 1,2-Dibromo-3-chloropropane	0.200	0.0	0.246	123	70-130	2	0-20

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3518	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394819	Instrument ID:	ECD7A.I_1	Data File:	061114.B\7f1115.D
Lab Sample ID:	1203106356		ECD7A.I_2		061114.B\7f1115.D
Column:	CLPesticides	Prep Date:	06/11/2014 08:20	Analyzed:	06/11/14 16:29
	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 1394819	1203106357	061114.B\7f1116.D 061114.B\7f1116.D	06/11/14	1645
02 LCSD for batch 1394819	1203106360	061114.B\7f1117.D 061114.B\7f1117.D	06/11/14	1701
03 CALA-14-79456	350326004	061114.B\7f1119.D 061114.B\7f1119.D	06/11/14	1733
04 CALA-14-79456MS	1203106358	061114.B\7f1120.D 061114.B\7f1120.D	06/11/14	1749

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3518	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1396055	Instrument ID:	ECD1A.I_1	Data File:	061614HE\E1f1609.D
Lab Sample ID:	1203109515		ECD1A.I_2		061614HE\E1f1609.D
Column:	ZB-50	Prep Date:	06/16/2014 13:45	Analyzed:	06/16/14 15:03
	ZB-XLB				

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 1396055	1203109516	061614HE\E1f1610.D 061614HE\E1f1610.D	06/16/14	1524
02 LCSD for batch 1396055	1203109517	061614HE\E1f1611.D 061614HE\E1f1611.D	06/16/14	1545
03 CALA-14-79456	350326001	061614HE\E1f1612.D 061614HE\E1f1612.D	06/16/14	1606
04 CALA-14-79449	350326007	061614HE\E1f1613.D 061614HE\E1f1613.D	06/16/14	1627

Quality Control Data

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203106356		
Client Sample:	QC for batch 1394819	Client:	ARSL004
Client ID:	MB for batch 1394819	Method:	SW846 3535A/8081B
Batch ID:	1394820	Inst:	ECD7A.I
Run Date:	06/11/2014 16:29	Analyst:	LOF
Prep Date:	06/11/2014 08:20	Aliquot:	1000 mL
Data File:	061114.B\7f1115.D	Column:	1 CLPesticides
	061114.B\7f1115.D		2 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		0.753	1.00	ug/L	75.3	(36%-106%)	
Decachlorobiphenyl		0.945	1.00	ug/L	94.5	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203106357		
Client Sample:	QC for batch 1394819	Client:	ARSL004
Client ID:	LCS for batch 1394819	Method:	SW846 3535A/8081B
Batch ID:	1394820	Inst:	ECD7A.I
Run Date:	06/11/2014 16:45	Analyst:	LOF
Prep Date:	06/11/2014 08:20	Aliquot:	1000 mL
Data File:	061114.B\7f1116.D	Column:	1 CLPesticides
	061114.B\7f1116.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0758	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.649	1.00	ug/L	64.9	(36%-106%)
Decachlorobiphenyl	0.783	1.00	ug/L	78.3	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3518	Date Collected:	06/06/2014 09:55	Matrix:	W
Lab Sample ID:	1203106358	Date Received:	06/10/2014 09:10		
Client Sample:	QC for batch 1394819	Client:	ARSL004	Project:	QC
Client ID:	CALA-14-79456MS	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1394820	Inst:	ECD7A.I	Dilution:	1
Run Date:	06/11/2014 17:49	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	06/11/2014 08:20	Aliquot:	940 mL	Final Volume:	5 mL
Data File:	061114.B\7f1120.D	Column:	1 CLPesticides		
	061114.B\7f1120.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0213	ug/L	0.00665	0.0213	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
4cmx		0.819	1.06	ug/L	77.0	(36%-106%)	
Decachlorobiphenyl		0.969	1.06	ug/L	91.1	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	GROUND WATER
Lab Sample ID:	1203106360		
Client Sample:	QC for batch 1394819	Client:	ARSL004
Client ID:	LCSD for batch 1394819	Method:	SW846 3535A/8081B
Batch ID:	1394820	Inst:	ECD7A.I
Run Date:	06/11/2014 17:01	Analyst:	LOF
Prep Date:	06/11/2014 08:20	Aliquot:	1000 mL
Data File:	061114.B\7f1117.D	Column:	1 CLPesticides
	061114.B\7f1117.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0923	ug/L	0.00625	0.020	2
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
4cmx		0.763	1.00	ug/L	76.3	(36%-106%)	
Decachlorobiphenyl		0.930	1.00	ug/L	93.0	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3518
Lab Sample ID: 1203109515
Client Sample: QC for batch 1396055
Client ID: MB for batch 1396055
Batch ID: 1396056
Run Date: 06/16/2014 15:03
Prep Date: 06/16/2014 13:45
Data File: 061614HE\E1f1609.D
061614HE\E1f1609.D

Client: ARSL004
Method: SW846 8011
Inst: ECD1A.I
Analyst: RXE1
Aliquot: 35 mL
Column: 1 ZB-50
2 ZB-XLB

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-059
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 35 mL

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		3.52	3.57	ug/L	98.6	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3518
Lab Sample ID: 1203109516
Client Sample: QC for batch 1396055
Client ID: LCS for batch 1396055
Batch ID: 1396056
Run Date: 06/16/2014 15:24
Prep Date: 06/16/2014 13:45
Data File: 061614HE\E1f1610.D
061614HE\E1f1610.D

Client: ARSL004
Method: SW846 8011
Inst: ECD1A.I
Analyst: RXE1
Aliquot: 35 mL
Column: 1 ZB-50
2 ZB-XLB

Matrix: WATER
Project: QC
SOP Ref: GL-OA-E-059
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 35 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.251	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.238	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.60	3.57	ug/L	129	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3518

Lab Sample ID: 1203109517

Client Sample: QC for batch 1396055

Client ID: LCSD for batch 1396055

Batch ID: 1396056

Run Date: 06/16/2014 15:45

Prep Date: 06/16/2014 13:45

Data File: 061614HE\E1f1611.D

061614HE\E1f1611.D

Client: ARSL004

Method: SW846 8011

Inst: ECD1A.I

Analyst: RXE1

Aliquot: 35 mL

Column: 1 ZB-50

2 ZB-XLB

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-059

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 35 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.246	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.220	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.34	3.57	ug/L	122	(73%-135%)	

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/ECD	Test / Method: SW846 3535A/8081B	Matrix Type: Liquid	Client Code: ARSL (ESHL)
Batch ID: 1394820	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350260(2014-3510),350326(2014-3518) Application Issues: Failed Recovery for MS/PS Failed Yield for Surrogates			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Sample 350326004 recovered surrogate 4cmx at 181%. The limits are 36-106%. 2. The 1203106358MS recovered Hexachlorobenzene at 0% on both columns. The limits are 50-150%.		1. The 1203106358MS recovered the surrogate in a similar manner at 187%. A MSD was not extracted with this batch. The data are reported. 2. A MSD was not extracted with this batch. The failures indicate matrix interference. The LCS passed recovery for this analyte. The data are reported.	

Originator's Name:
Lloyd O Fox 12-JUN-14

Data Validator/Group Leader:
Herbert Maier 13-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 17-JUN-14	Division: Federal	Quality Criteria: SOP	Type: Process
Instrument Type: GC/ECD	Test / Method: SW846 8011	Matrix Type: Liquid	Client Code: ARSL
Batch ID: 1396056	Sample Numbers: 350326001, 350326007, 350510003		
Potentially affected work order(s)(SDG): 350326(2014-3518),350510(2014-3534) Application Issues: Other			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. No surrogate was added to the RL check.		1. Surrogate was not added to the RL check; however, the recoveries for both target analytes were within acceptable limits.	

Originator's Name:

Lindsey Jensen 17-JUN-14

Data Validator/Group Leader:

Cameron Bearden 18-JUN-14

Herbicide Analysis

Case Narrative

**Herbicide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3518**

Method/Analysis Information

Procedure: Analysis of Chlorophenoxy Acid Herbicides by ECD
Analytical Method: SW846 8151A
Prep Method: SW846 8151A
Analytical Batch Number: 1394997
Prep Batch Number: 1394996

Sample Analysis

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

Sample ID	Client ID
350326005	CALA-14-79456
1203106734	Method Blank (MB)
1203106735	Laboratory Control Sample (LCS)
1203106736	350326005(CALA-14-79456) Matrix Spike (MS)
1203106738	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

All associated calibration verification standards (ICV, CVS, 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

Sample 350326005 (CALA-14-79456) and the MS(1203106736) did not meet surrogate recovery acceptance criteria. Since Pentachlorophenol was not detected in the parent sample, the biased high surrogate recoveries in the MS and parent sample 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 350326005 (CALA-14-79456) was selected for analysis as the matrix spike. A matrix spike duplicate was not extracted or analyzed with this batch. 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(1203106736) did not meet spike recovery acceptance criteria for Pentachlorophenol. The LCS and LCSD were well within the acceptance criteria for Pentachlorophenol. It is possible that the MS was not fortified with the Herbicide spiking standard. The chromatograph for the MS displays no trace of the spike analytes that are in the Herbicide spiking standard. Since there was insufficient sample volume remaining to re-extract, the data results have been reported for 350326005 (CALA-14-79456).

Matrix Spike Duplicate (MSD) Recovery Statement

There was no matrix spike duplicate extracted and analyzed with this batch, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

MS/MSD Relative Percent Difference (RPD) Statement

There are no reportable MS/MSD RDP values since a MSD was not extracted and analyzed with this batch, only a matrix spike. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

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 sample 350326005 (CALA-14-79456) and associated QC: 1304146.

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 the client sample 350326005 (CALA-14-79456), 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
ECD6A.I_1	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series GC/ECD	Rtx-CLP I	30m x 0.32mm, 0.50um (Rtx-CLPesticide)
ECD6A.I_2	Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler	HP6890 Series GC/ECD	Rtx-CLP II	30m x 0.32mm, 0.50um (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: 2014-3518 GEL Work Order: 350326

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: 

Name: Barbara Bailey

Date: 24 JUN 2014

Title: Data Validator

Sample Data Summary

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3518
Lab Sample ID: 350326005

Client ID: CALA-14-79456
Batch ID: 1394997
Run Date: 06/12/2014 17:30
Prep Date: 06/11/2014 13:00
Data File: 061214\E6f1209.D
061214\E6f1209.D

Date Collected: 06/06/2014 09:55
Date Received: 06/10/2014 09:05
Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 950 mL
Column: 1 CLP
2 CLP2

Matrix: W

Project: ESHL00714
SOP Ref: GL-OA-E-011
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 10 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.263	ug/L	0.0526	0.263	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		8.89	5.26	ug/L	169	*(43%-137%)	

Quality Control Summary

Herbicide
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3518**Matrix Type: LIQUID**

Sample ID	Client ID	DCAA 1	DCAA 2
		%REC #	%REC #
1203106734	MB for batch 1394996	91	91
1203106735	LCS for batch 1394996	92	94
1203106738	LCSD for batch 1394996	94	93
350326005	CALA-14-79456	169 *	89
1203106736	CALA-14-79456MS	175 *	96

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

Page 1 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394996

Matrix: WATER

Lab Sample ID 1203106735

Instrument: ECD6A.I

Analysis Date: 06/12/2014 15:00

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394996

Inj. Vol: 1 uL

Batch ID: 1394997

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	1.74	87	55-113

Herbicide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3518

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394996

Matrix: WATER

Lab Sample ID 1203106738

Instrument: ECD6A.I

Analysis Date: 06/12/2014 15:28

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394996

Inj. Vol: 1 uL

Batch ID: 1394997

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	1.75	88	55-113	1	0-30

Herbicide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3518

Sample Type: Matrix Spike

Client ID: CALA-14-79456MS

Matrix: W

Lab Sample ID 1203106736

Instrument: ECD6A.I

Analysis Date: 06/12/2014 17:58

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394996

Inj. Vol: 1 uL

Batch ID: 1394997

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS Pentachlorophenol	2.11	0.00 U	0.00	0 *	37-114

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3518	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394996	Instrument ID:	ECD6A.I_1	Data File:	061214\E6f1205.D
Lab Sample ID:	1203106734		ECD6A.I_2		061214\E6f1205.D
Column:	CLP	Prep Date:	06/11/2014 13:00	Analyzed:	06/12/14 14:33
	CLP2				

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 1394996	1203106735	061214\E6f1206.D 061214\E6f1206.D	06/12/14	1500
02 LCSD for batch 1394996	1203106738	061214\E6f1207.D 061214\E6f1207.D	06/12/14	1528
03 CALA-14-79456	350326005	061214\E6f1209.D 061214\E6f1209.D	06/12/14	1730
04 CALA-14-79456MS	1203106736	061214\E6f1210.D 061214\E6f1210.D	06/12/14	1758

Quality Control Data

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203106734		
Client Sample:	QC for batch 1394996	Project:	QC
Client ID:	MB for batch 1394996	SOP Ref:	GL-OA-E-011
Batch ID:	1394997	Dilution:	1
Run Date:	06/12/2014 14:33	Inj. Vol:	1 uL
Prep Date:	06/11/2014 13:00	Final Volume:	10 mL
Data File:	061214\E6f1205.D		
	061214\E6f1205.D		

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		4.57	5.00	ug/L	91.3	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203106735		
Client Sample:	QC for batch 1394996	Client:	ARSL004
Client ID:	LCS for batch 1394996	Method:	SW846 8151A
Batch ID:	1394997	Inst:	ECD6A.I
Run Date:	06/12/2014 15:00	Analyst:	RXE1
Prep Date:	06/11/2014 13:00	Aliquot:	1000 mL
Data File:	061214\E6f1206.D	Column:	1 CLP
	061214\E6f1206.D		2 CLP2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.74	ug/L	0.050	0.250	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.71	5.00	ug/L	94.1	(43%-137%)	

Herbicide
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number:	2014-3518	Date Collected:	06/06/2014 09:55	Matrix:	W
Lab Sample ID:	1203106736	Date Received:	06/10/2014 09:10		
Client Sample:	QC for batch 1394996	Client:	ARSL004	Project:	QC
Client ID:	CALA-14-79456MS	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1394997	Inst:	ECD6A.I	Dilution:	1
Run Date:	06/12/2014 17:58	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/11/2014 13:00	Aliquot:	950 mL	Final Volume:	10 mL
Data File:	061214\E6f1210.D	Column:	1 CLP		
	061214\E6f1210.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.263	ug/L	0.0526	0.263	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		9.20	5.26	ug/L	175	*(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3518	Matrix:	WATER
Lab Sample ID:	1203106738		
Client Sample:	QC for batch 1394996	Client:	ARSL004
Client ID:	LCSD for batch 1394996	Method:	SW846 8151A
Batch ID:	1394997	Inst:	ECD6A.I
Run Date:	06/12/2014 15:28	Analyst:	RXE1
Prep Date:	06/11/2014 13:00	Aliquot:	1000 mL
Data File:	061214\E6f1207.D	Column:	1 CLP
	061214\E6f1207.D		2 CLP2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.75	ug/L	0.050	0.250	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.66	5.00	ug/L	93.3	(43%-137%)	

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 13-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/ECD	Test / Method: SW846 8151A	Matrix Type: Liquid	Client Code: ESHL, OLAB
Batch ID: 1394997	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350309(X406106),350326(2014-3518) Application Issues: Failed Recovery for MS/PS Failed Yield for Surrogates			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Sample 350326005 and the MS(1203106736) did not meet surrogate recovery acceptance criteria. 2. The MS(1203106736) did not meet spike recovery acceptance criteria for Pentachlorophenol.		1. Since Pentachlorophenol was not detected in the parent sample, the biased high surrogate recoveries in the MS and parent sample had no adverse impact on the data and the results have been reported. 2. The LCS and LCSD were well within the acceptance criteria for Pentachlorophenol. It is possible that the MS was not fortified with the Herbicide spiking standard. The chromatograph for the MS displays no trace of the spike analytes that are in the Herbicide spiking standard. Since there was insufficient sample volume remaining to re-extract, the data results have been reported.	

Originator's Name:

Lindsey Jensen 13-JUN-14

Data Validator/Group Leader:

Barbara Bailey 13-JUN-14

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International, LLC (ARSL)
SDG 2014-3518**

Sample Analysis

Sample ID	Client ID
350326003	CALA-14-79456
350326006	CALA-14-79462
1203106572	Method Blank (MB) ICP
1203106573	Laboratory Control Sample (LCS)
1203106577	350326006(CALA-14-79462L) Serial Dilution (SD)
1203106574	350326006(CALA-14-79462D) Sample Duplicate (DUP)
1203106575	350326006(CALA-14-79462S) Matrix Spike (MS)
1203106485	Method Blank (MB) ICP-MS
1203106486	Laboratory Control Sample (LCS)
1203106489	350326006(CALA-14-79462L) Serial Dilution (SD)
1203106487	350326006(CALA-14-79462D) Sample Duplicate (DUP)
1203106488	350326006(CALA-14-79462S) Matrix Spike (MS)
1203110252	Method Blank (MB) CVAA
1203110253	Laboratory Control Sample (LCS)
1203110264	350053003(CAPU-14-79428L) Serial Dilution (SD)
1203110257	350053003(CAPU-14-79428D) Sample Duplicate (DUP)
1203110258	350053003(CAPU-14-79428S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1394919, 1394858, 1396344 and 1400195
Prep Batch :	1394918, 1394857 and 1396342
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 10, 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 an ESI SC-FAST introduction, 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 0.4L/min, argon gas flows of 13 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 - ICPMS was performed on a Perkin Elmer ELAN DRC-e 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, and dynamic reaction cell. The DRC-e uses a dynamic reaction cell to eliminate polyatomic interferences. 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/PQL Requirements

All PQL standards for 6010C met the control limits with the exception of sodium listed below. The sample concentrations were less than the MDL or greater than 2x the PQL, so the data is not adversely affected. 350326006 (CALA-14-79462)-ICP.

ICSA/ICSAB Statement

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

Continuing Calibration Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

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

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (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: 350326006 (CALA-14-79462)-ICP and ICP-MS and 350053003 (CAPU-14-79428)-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. All applicable analytes met the acceptance criteria.

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 percent difference criteria.

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. Sample required dilution for tin in order to minimize suppression due to matrix interferences. 350326006

(CALA-14-79462)-ICP. Sample was diluted to ensure that molybdenum concentration was within the linear calibration range of the instrument. 350326006 (CALA-14-79462)-ICP-MS.

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 reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. A data exception report was not required 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.

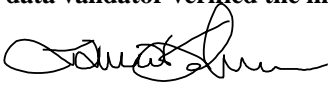
Certification Statement

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:  Date: 7/3/14

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: 2014-3518 GEL Work Order: 350326

The Qualifiers in this report are defined as follows:

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

J Value is estimated


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



7/3/14

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3518**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 350326003 **BASIS:** As Received **DATE COLLECTED** 06-JUN-14**CLIENT ID:** CALA-14-79456 **LEVEL:** Low **DATE RECEIVED** 10-JUN-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	06/18/14 17:38	061814W2-7	1396344

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1396344	1396342	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3518**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 350326006**BASIS:** As Received**DATE COLLECTED** 06-JUN-14**CLIENT ID:** CALA-14-79462**LEVEL:** Low**DATE RECEIVED** 10-JUN-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	06/18/14 17:43	061814W2-7	1396344

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3518

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 350326006

BASIS: As Received

DATE COLLECTED 06-JUN-14

CLIENT ID: CALA-14-79462

LEVEL: Low

DATE RECEIVED 10-JUN-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	102	ug/L	J	68	200	200	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-38-2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-39-3	Barium	57.3	ug/L		1	5	5	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-42-8	Boron	62.6	ug/L		15	50	50	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-70-2	Calcium	22100	ug/L		50	200	200	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-47-3	Chromium	3.08	ug/L	J	2	10	10	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/16/14 18:26	061614-1	1394919
7439-89-6	Iron	37.1	ug/L	J	30	100	100	1	P	HSC	06/16/14 18:26	061614-1	1394919
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7439-95-4	Magnesium	5160	ug/L		110	300	300	1	P	HSC	06/16/14 18:26	061614-1	1394919
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/16/14 18:26	061614-1	1394919
7439-98-7	Molybdenum	172	ug/L		1.65	5	5	10	MS	BAJ	06/24/14 08:34	140623-6	1394858
7440-02-0	Nickel	0.567	ug/L	J	0.5	2	2	1	MS	BAJ	06/24/14 14:48	140624-5	1394858
7440-09-7	Potassium	6790	ug/L		50	150	150	1	P	HSC	06/16/14 18:26	061614-1	1394919
7782-49-2	Selenium	1.6	ug/L	J	1.5	5	5	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7631-86-9	Silica	45100	ug/L		53	213	213	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-23-5	Sodium	51700	ug/L		100	300	300	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-24-6	Strontium	140	ug/L		1	5	5	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/24/14 00:11	140623-2	1394858
7440-31-5	Tin	100	ug/L	U	25	100	100	10	P	HSC	06/16/14 18:51	061614-1	1394919
7440-61-1	Uranium	1.08	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/14 11:21	140623-4	1394858
7440-62-2	Vanadium	3.81	ug/L	J	1	5	5	1	P	HSC	06/16/14 18:26	061614-1	1394919
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/16/14 18:26	061614-1	1394919

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3518**CONTRACT:** ESHL00714**METHOD TYPE:****SAMPLE ID:** 350326006 **BASIS:** As Received **DATE COLLECTED** 06-JUN-14**CLIENT ID:** CALA-14-79462 **LEVEL:** Low **DATE RECEIVED** 10-JUN-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	76.3	mg/L		0.453	1.24	1.24	1		JJ2	07/02/14 10:55		1400195

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1394858	1394857	SW846 3005A	50	mL	50	mL	06/13/14	JXO1
1394919	1394918	SW846 3005A	50	mL	50	mL	06/12/14	JXO1
1396344	1396342	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

Analytical Methods:*P** SW846 3005A/6010C**MS** SW846 3005A/6020A**AV** EPA 245.1/245.2

Quality Control Summary

METALS
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PREPARATION BLANK SUMMARY

SDG NO. 2014-3518

Contract: ESHL00714

Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203106485	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	1.7	ug/L	+/-5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/-1	U	MS	0.11	1
	Chromium	2	ug/L	+/-10	U	MS	2	10
	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
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1203106572	Aluminum	68	ug/L	+/-200	U	P	68	200
	Barium	1	ug/L	+/-5	U	P	1	5
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Calcium	50	ug/L	+/-200	U	P	50	200
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	204	ug/L	+/-300	J	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1203110252	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2

*Analytical Methods:

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

METALS

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Matrix Spike Summary

SDG NO. 2014-3518 **Client ID:** CALA-14-79462S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 350326006 **Spike ID:** 1203106488

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Thallium	ug/L	75-125	44.9		0.45	U	50	89.9		MS
Uranium	ug/L	75-125	49.3		1.08		50	96.5		MS
Antimony	ug/L	75-125	49		1	U	50	97.7		MS
Arsenic	ug/L	75-125	47.7		1.7	U	50	92.2		MS
Cadmium	ug/L	75-125	47.3		0.11	U	50	94.6		MS
Chromium	ug/L	75-125	51.2		3.08	J	50	96.2		MS
Lead	ug/L	75-125	47.2		0.5	U	50	94.3		MS
Molybdenum	ug/L	75-125	218		172		50	93.1		MS
Nickel	ug/L	75-125	51.7		0.567	J	50	102		MS
Selenium	ug/L	75-125	48.1		1.6	J	50	93		MS
Silver	ug/L	75-125	49.9		0.2	U	50	99.9		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3518

Client ID: CALA-14-79462S

Contract: ESHL00714

Level: Low

Matrix: WATER

% Solids:

Sample ID: 350326006

Spike ID: 1203106575

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	5160		102	J	5000	101		P
Barium	ug/L	75-125	556		57.3		500	99.6		P
Beryllium	ug/L	75-125	503		1	U	500	101		P
Boron	ug/L	75-125	555		62.6		500	98.5		P
Calcium	ug/L		26000		22100		5000	78.6	N/A	P
Cobalt	ug/L	75-125	491		1	U	500	98.1		P
Copper	ug/L	75-125	520		3	U	500	104		P
Iron	ug/L	75-125	5160		37.1	J	5000	102		P
Magnesium	ug/L	75-125	10100		5160		5000	99.4		P
Manganese	ug/L	75-125	498		2	U	500	99.5		P
Potassium	ug/L	75-125	11500		6790		5000	94.7		P
Silica	ug/L		53200		45100		10700	75.6	N/A	P
Sodium	ug/L		53800		51700		5000	42	N/A	P
Strontium	ug/L	75-125	648		140		500	102		P
Tin	ug/L	75-125	442		25	U	500	88.4		P
Vanadium	ug/L	75-125	527		3.81	J	500	105		P
Zinc	ug/L	75-125	499		3.3	U	500	99.7		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Matrix Spike Summary

SDG NO. 2014-3518 **Client ID:** CAPU-14-79428S**Contract:** ESHL00714 **Level:** Low**Matrix:** WATER **% Solids:****Sample ID:** 350053003 **Spike ID:** 1203110258

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.21		0.067	U	2	111		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
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Duplicate Sample Summary

SDG No.: 2014–3518

Lab Code: GEL

Contract: ESHL00714

Client ID: CALA–14–79462D

Matrix: WATER

Level: Low

Sample ID: 350326006

Duplicate ID: 1203106487

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	+/-10	3.08 J		2.9 J		5.98		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/-20%	172		163		5.05		MS
Nickel	ug/L	+/-2	0.567 J		0.549 J		3.23		MS
Selenium	ug/L	+/-5	1.6 J		1.65 J		3.2		MS
Silver	ug/L		0.2 U		0.2 U				MS
Thallium	ug/L		0.45 U		0.45 U				MS
Uranium	ug/L	+/-20%	1.08		1.08		.278		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2014-3518

Lab Code: GEL

Contract: ESHL00714

Client ID: CALA-14-79462D

Matrix: WATER

Level: Low

Sample ID: 350326006

Duplicate ID: 1203106574

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	102 J		92.1 J		10.7		P
Barium	ug/L	+/-20%	57.3		56.4		1.53		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	62.6		61.7		1.44		P
Calcium	ug/L	+/-20%	22100		21500		2.76		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3 U		3 U				P
Iron	ug/L	+/-100	37.1 J		37.2 J		.127		P
Magnesium	ug/L	+/-20%	5160		5140		.379		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	6790		6650		2.14		P
Silica	ug/L	+/-20%	45100		43900		2.79		P
Sodium	ug/L	+/-20%	51700		50500		2.44		P
Strontium	ug/L	+/-20%	140		137		2.39		P
Tin	ug/L		25 U		25 U				P
Vanadium	ug/L	+/-5	3.81 J		3.67 J		3.71		P
Zinc	ug/L		3.3 U		3.3 U				P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2014–3518**Lab Code:** GEL**Contract:** ESHL00714**Client ID:** CAPU–14–79428D**Matrix:** WATER**Level:** Low**Sample ID:** 350053003**Duplicate ID:** 1203110257**Percent Solids for Dup:** N/A

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3518

Contract: ESHL00714

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203106486								
	Nickel	ug/L	50	53.9		108	80-120	MS
	Selenium	ug/L	50	48		96	80-120	MS
	Silver	ug/L	50	52		104	80-120	MS
	Thallium	ug/L	50	46.2		92.4	80-120	MS
	Uranium	ug/L	50	48.2		96.5	80-120	MS
	Antimony	ug/L	50	49.1		98.2	80-120	MS
	Arsenic	ug/L	50	45.4		90.8	80-120	MS
	Cadmium	ug/L	50	49		98	80-120	MS
	Chromium	ug/L	50	50		100	80-120	MS
	Lead	ug/L	50	48.2		96.3	80-120	MS
	Molybdenum	ug/L	50	53.9		108	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3518

Contract: ESHL00714

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203106573								
	Aluminum	ug/L	5000	4990		99.8	80-120	P
	Barium	ug/L	500	499		99.7	80-120	P
	Beryllium	ug/L	500	497		99.3	80-120	P
	Boron	ug/L	500	480		95.9	80-120	P
	Calcium	ug/L	5000	4930		98.7	80-120	P
	Cobalt	ug/L	500	494		98.8	80-120	P
	Copper	ug/L	500	493		98.6	80-120	P
	Iron	ug/L	5000	5060		101	80-120	P
	Magnesium	ug/L	5000	5120		102	80-120	P
	Manganese	ug/L	500	498		99.6	80-120	P
	Potassium	ug/L	5000	5060		101	80-120	P
	Silica	ug/L	10700	10200		95.2	80-120	P
	Sodium	ug/L	5000	5450		109	80-120	P
	Strontium	ug/L	500	507		101	80-120	P
	Tin	ug/L	500	500		100	80-120	P
	Vanadium	ug/L	500	515		103	80-120	P
	Zinc	ug/L	500	493		98.7	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3518

Contract: ESHL00714

Aqueous LCS Source: GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203110253	Mercury	ug/L	2	2		100	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3518

Client ID: CALA-14-79462L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 350326006

Serial Dilution ID: 1203106489

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	3.08	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	17.2		16.9		1.76		10	MS
Nickel	.567	J	2.5	U	100			MS
Selenium	1.6	J	7.5	U	100			MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	1.08		1.09		.833			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3518

Client ID: CALA-14-79462L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 350326006

Serial Dilution ID: 1203106577

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	102	J	340	U	100			P
Barium	57.3		56.8		.772		10	P
Beryllium	1	U	5	U				P
Boron	62.6		75	U	100			P
Calcium	22100		21500		2.79		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	37.1	J	150	U	100			P
Magnesium	5160		5140		.271			P
Manganese	2	U	10	U				P
Potassium	6790		6730		.903		10	P
Silica	45100		43200		4.27		10	P
Sodium	51700		51800		.07		10	P
Strontium	140		138		1.51		10	P
Tin	2.5	U	12.5	U				P
Vanadium	3.81	J	5.11	J	34.1			P
Zinc	3.3	U	16.5	U				P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3518 **Client ID:** CAPU-14-79428L**Contract:** ESHL00714**Matrix:** LIQUID **Level:** Low**Sample ID:** 350053003 **Serial Dilution ID:** 1203110264

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

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International, LLC (ARSL)
SDG 2014-3518**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1394347

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
350326003	CALA-14-79456
1203105820	Method Blank (MB)
1203105822	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203105823	350053030(CAPU-14-79415) Sample Duplicate (DUP)
1203105824	350260005(CAPU-14-79427) Post Spike (PS)
1203105825	350053030(CAPU-14-79415) Post Spike (PS)
1203105826	Laboratory Control Sample (LCS)
1203112489	350748001(VS-R28-V2-79984) Sample Duplicate (DUP)
1203112490	350748001(VS-R28-V2-79984) Post Spike (PS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 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 samples were selected for QC analysis: 350053030 (CAPU-14-79415), 350260005 (CAPU-14-79427) and 350748001 (VS-R28-V2-79984).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

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

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Cyanide and Total
Analytical Batch: 1394269 **Method:** WSP-CN(T)
Prep Batch : 1394268 **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
350326003	CALA-14-79456
1203104798	Method Blank (MB)
1203104803	Laboratory Control Sample (LCS)
1203105442	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203105443	350260005(CAPU-14-79427) Matrix Spike (MS)
1203106118	350326003(CALA-14-79456) Sample Duplicate (DUP)
1203106119	350326003(CALA-14-79456) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 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: 350260005 (CAPU-14-79427) and 350326003 (CALA-14-79456).

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

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203105443 (CAPU-14-79427) and 1203106119 (CALA-14-79456).

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203106118 (CALA-14-79456).

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1303076. 1203105443 (CAPU-14-79427) and 1203106119 (CALA-14-79456).

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: 1395154

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
350326006	CALA-14-79462
1203107171	Method Blank (MB)
1203107174	Laboratory Control Sample (LCS)
1203108128	350326006(CALA-14-79462) Sample Duplicate (DUP)
1203108129	350326006(CALA-14-79462) 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-5000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

All continuing calibration blanks (CCBs) associated with reported data from this batch were within acceptance limits.

Calibration Verification Information (CCV)

All continuing calibration verification standards (CCVs) associated with reported data from this batch were within acceptance limits.

Y Intercept Rule

The absolute value of the intercept is less than 3 times the MDL.

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350326006 (CALA-14-79462).

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: 1203108128 (CALA-14-79462), 1203108129 (CALA-14-79462) and 350326006 (CALA-14-79462).

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: 1203108128 (CALA-14-79462), 1203108129 (CALA-14-79462) and 350326006 (CALA-14-79462).

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: 1394294 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1394293 **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
350326006	CALA-14-79462
1203104860	Method Blank (MB)
1203104861	Laboratory Control Sample (LCS)
1203104864	350137006(CAPU-14-79437) Sample Duplicate (DUP)
1203104865	350137006(CAPU-14-79437) Matrix Spike (MS)
1203107049	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203107050	350260006(CAPU-14-79435) 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.

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: 350137006 (CAPU-14-79437) and 350260006 (CAPU-14-79435).

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 instrument failure. The results from the reanalysis are reported. 1203104860 (MB) and 1203107049 (CAPU-14-79435).

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:	1395984	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1395983	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
350326003	CALA-14-79456
1203109333	Method Blank (MB)
1203109334	Laboratory Control Sample (LCS)
1203109335	350410001(BDW06-14-79470) Sample Duplicate (DUP)
1203109336	350410001(BDW06-14-79470) 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: 350410001 (BDW06-14-79470).

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

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203109336 (BDW06-14-79470).

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203109335 (BDW06-14-79470).

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. 1203109334 (LCS).

Miscellaneous Information**Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1305283. 1203109336 (BDW06-14-79470).

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: 1395986

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
350326006	CALA-14-79462
1203109347	Method Blank (MB)
1203109348	350326006(CALA-14-79462) Sample Duplicate (DUP)
1203109352	350326006(CALA-14-79462) Post Spike (PS)
1203109356	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: 350326006 (CALA-14-79462).

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: 1203109348 (CALA-14-79462), 1203109352 (CALA-14-79462) and 350326006 (CALA-14-79462).

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:	1394300	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1394298	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
350326006	CALA-14-79462
1203104877	Method Blank (MB)
1203104878	Laboratory Control Sample (LCS)
1203109298	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203109299	350326006(CALA-14-79462) Sample Duplicate (DUP)
1203109301	350260006(CAPU-14-79435) Matrix Spike (MS)
1203109302	350326006(CALA-14-79462) 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 samples were selected for QC analysis: 350260006 (CAPU-14-79435) and 350326006 (CALA-14-79462).

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

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

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1203109299 (CALA-14-79462).

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. 1203109299 (CALA-14-79462), 1203109301 (CAPU-14-79435), 1203109302 (CALA-14-79462) and 350326006 (CALA-14-79462). The following sample was re-analyzed to verify the result: 1203109298 (CAPU-14-79435).

Miscellaneous Information**Data Exception (DER) Documentation**

The following DER was generated for this SDG: 1305188. 1203109299 (CALA-14-79462).

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: 1394969

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
350326006	CALA-14-79462
1203106680	Method Blank (MB)
1203106681	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203106684	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-001 REV# 15.

Preparation/Analytical Method Verification

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

Calibration Information

The Solids analysis was performed on a Sartorius Balance BAL216. Solids lab

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350260006 (CAPU-14-79435).

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1203106681 (CAPU-14-79435).

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

The following DER was generated for this SDG: 1305747. 1203106681 (CAPU-14-79435).

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: 1398576

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
350326006	CALA-14-79462
1203115768	350326006(CALA-14-79462) Sample Duplicate (DUP)
1203115770	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-009 REV# 11.

Preparation/Analytical Method Verification

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

Calibration Information

The Titration and Ion analysis was performed on a Orion 160 Conductivity Meter.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery 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.

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: 1398487 **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
350326006	CALA-14-79462
1203115516	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203115519	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-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 Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery 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.

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: 1308454. 1203115516 (CAPU-14-79435) and 350326006 (CALA-14-79462).

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: 1396657 **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
350326006	CALA-14-79462
1203111027	Method Blank (MB)
1203111031	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203111035	350260006(CAPU-14-79435) Matrix Spike (MS)
1203111037	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-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 and Ion 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: 350260006 (CAPU-14-79435).

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 samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information**Data Exception (DER) Documentation**

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement

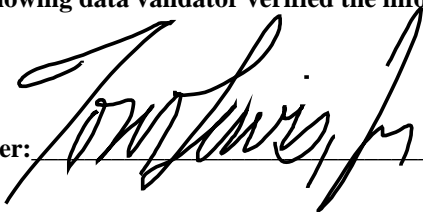
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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:

07July14

Sample Data Summary

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Certificate of Analysis Report for

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

Client SDG: 2014-3518 GEL Work Order: 350326

The Qualifiers in this report are defined as follows:

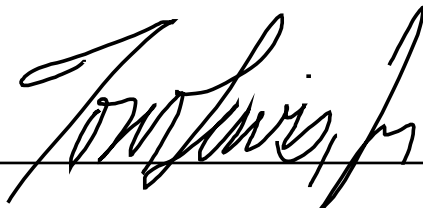
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical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

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

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Certificate of Analysis

Report Date: July 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: 2014-3518

Client Sample ID: CALA-14-79456
Sample ID: 350326003
Matrix: W
Collect Date: 06-JUN-14 09:55
Receive Date: 10-JUN-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		1.18	0.330	1.00	mg/L	1	TSM	06/20/14	0135	1394347	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	06/11/14	1022	1394269	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl		0.136	0.033	0.100	mg/L	1	KLP1	06/17/14	1515	1395984	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/11/14	0928	1394268
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/16/14	1530	1395983

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 335.4	
3	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: July 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: 2014-3518

Client Sample ID: CALA-14-79462
Sample ID: 350326006
Matrix: W
Collect Date: 06-JUN-14 09:55
Receive Date: 10-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide		1.31	0.067	0.200	mg/L	1	DM	06/13/14	2234	1395154	1
Fluoride		0.665	0.033	0.100	mg/L	1					
Chloride		17.0	0.335	1.00	mg/L	5	DM	06/17/14	1159	1395154	2
Sulfate		21.9	0.665	2.00	mg/L	5					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.0571	0.017	0.050	mg/L	1	KLP1	06/12/14	1445	1394294	3
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		1.13	0.085	0.250	mg/L	5	AXH3	06/19/14	1108	1395986	4
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.127	0.017	0.050	mg/L	1	KLP1	06/17/14	1326	1394300	5
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		223	3.40	14.3	mg/L		MXB3	06/11/14	1458	1394969	6
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 15.1C	H	7.57	0.010	0.100	SU	1	PXO1	06/25/14	1257	1398487	7
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		136	0.725	1.00	mg/L		PXO1	06/18/14	2251	1396657	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		376	1.00	1.00	umhos/cm	1	EXM3	06/25/14	1424	1398576	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/12/14	1229	1394293
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/16/14	1530	1394298

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Certificate of Analysis

Report Date: July 7, 2014

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

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

Client SDG: 2014-3518

Client Sample ID: CALA-14-79462
Sample ID: 350326006

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: July 7, 2014

Page 1 of 5

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

Contact: Mr. Keith Greene

Workorder: 350326

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1394347										
QC1203105822	350260005	DUP									
Total Organic Carbon Average		U	ND	U	ND	mg/L	N/A		TSM	06/20/14	01:07
QC1203105823	350053030	DUP									
Total Organic Carbon Average		U	ND	U	ND	mg/L	N/A			06/19/14	22:40
QC1203112489	350748001	DUP									
Total Organic Carbon Average		J	0.439	J	0.426	mg/L	3.01 ^	(+/-1.00)		06/20/14	04:59
QC1203105826	LCS										
Total Organic Carbon Average	10.0				9.92	mg/L		99.2 (85%-115%)		06/19/14	19:10
QC1203105820	MB										
Total Organic Carbon Average				U	ND	mg/L				06/19/14	19:01
QC1203105824	350260005	PS									
Total Organic Carbon Average	10.0	U	ND		10.5	mg/L		103 (65%-120%)		06/20/14	01:27
QC1203105825	350053030	PS									
Total Organic Carbon Average	10.0	U	ND		10.4	mg/L		102 (65%-120%)		06/19/14	23:00
QC1203112490	350748001	PS									
Total Organic Carbon Average	10.0	J	0.439		10.7	mg/L		103 (65%-120%)		06/20/14	05:19
Flow Injection Analysis											
Batch	1394269										
QC1203105442	350260005	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	06/11/14	10:20
QC1203106118	350326003	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A			06/11/14	10:23
QC1203104803	LCS										
Cyanide, Total	50.0				54.6	ug/L		109 (90%-110%)		06/11/14	10:03
QC1203104798	MB										
Cyanide, Total				U	ND	ug/L				06/11/14	09:58
QC1203105443	350260005	MS									
Cyanide, Total	100	U	ND		114	ug/L		114* (90%-110%)		06/11/14	10:21
QC1203106119	350326003	MS									
Cyanide, Total	100	U	ND		112	ug/L		112* (90%-110%)		06/11/14	10:28

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1395154										
QC1203108128	350326006	DUP									
Bromide		1.31		1.30	mg/L	0.956		(0%-20%)	DM	06/13/14	23:05
Chloride		17.0		17.1	mg/L	0.448		(0%-20%)		06/17/14	12:31
Fluoride		0.665		0.661	mg/L	0.633		(0%-20%)		06/13/14	23:05
Sulfate		21.9		22.1	mg/L	0.907		(0%-20%)		06/17/14	12:31
QC1203107174	LCS										
Bromide	1.25			1.27	mg/L		102	(90%-110%)		06/13/14	22:02
Chloride	5.00			4.96	mg/L		99.2	(90%-110%)			
Fluoride	2.50			2.36	mg/L		94.5	(90%-110%)			
Sulfate	10.0			10.2	mg/L		102	(90%-110%)			
QC1203107171	MB										
Bromide		U		ND	mg/L					06/13/14	21:31
Chloride		U		ND	mg/L						
Fluoride		U		ND	mg/L						
Sulfate		U		ND	mg/L						
QC1203108129	350326006	PS									
Bromide	1.25	1.31		2.59	mg/L		102	(90%-110%)		06/13/14	23:36
Chloride	5.00	3.41		8.85	mg/L		109	(90%-110%)		06/17/14	13:02
Fluoride	2.50	0.665		3.06	mg/L		95.8	(90%-110%)		06/13/14	23:36
Sulfate	10.0	4.38		15.0	mg/L		106	(90%-110%)		06/17/14	13:02
Nutrient Analysis											
Batch	1394294										
QC1203104864	350137006	DUP									
Nitrogen, Ammonia		0.0958		0.116	mg/L	19.1	^	(+/-0.050)	KLP1	06/12/14	14:30
QC1203107049	350260006	DUP									
Nitrogen, Ammonia		0.176		0.202	mg/L	13.8	^	(+/-0.050)		06/12/14	14:53
QC1203104861	LCS										
Nitrogen, Ammonia	1.00			1.00	mg/L		100	(90%-110%)		06/12/14	14:16

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QC Summary

Workorder: 350326

Page 3 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1394294										
QC1203104860 MB											
Nitrogen, Ammonia			U	ND	mg/L				KLP1	06/12/14	14:26
QC1203104865 350137006 MS											
Nitrogen, Ammonia	1.00	0.0958		1.13	mg/L		103	(90%-110%)		06/12/14	14:30
QC1203107050 350260006 MS											
Nitrogen, Ammonia	1.00	0.176		1.10	mg/L		92.4	(90%-110%)		06/12/14	14:41
Batch	1394300										
QC1203109298 350260006 DUP											
Phosphorus, Total as P	J	0.0433	J	0.0463	mg/L	6.70 ^		(+/-0.050)	KLP1	06/17/14	13:42
QC1203109299 350326006 DUP											
Phosphorus, Total as P		0.127		0.269	mg/L	71.7* ^		(+/-0.050)		06/17/14	13:27
QC1203104878 LCS											
Phosphorus, Total as P	1.00			0.974	mg/L		97.4	(79%-126%)		06/17/14	10:52
QC1203104877 MB											
Phosphorus, Total as P			U	ND	mg/L					06/17/14	10:51
QC1203109301 350260006 MS											
Phosphorus, Total as P	1.00	J	0.0433	1.07	mg/L		103	(64%-134%)		06/17/14	13:24
QC1203109302 350326006 MS											
Phosphorus, Total as P	1.00	0.127		1.20	mg/L		107	(64%-134%)		06/17/14	13:28
Batch	1395984										
QC1203109335 350410001 DUP											
Nitrogen, Total Kjeldahl	U	ND	J	0.0643	mg/L	200			KLP1	06/17/14	15:20
QC1203109334 LCS											
Nitrogen, Total Kjeldahl	1.00			1.05	mg/L		105	(90%-110%)		06/17/14	15:26
QC1203109333 MB											
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/17/14	15:14
QC1203109336 350410001 MS											
Nitrogen, Total Kjeldahl	1.00	U	ND	1.15	mg/L		115*	(90%-110%)		06/17/14	15:20
Batch	1395986										
QC1203109348 350326006 DUP											
Nitrogen, Nitrate/Nitrite		1.13		1.02	mg/L	10.2 ^		(+/-0.250)	AXH3	06/19/14	11:10
QC1203109356 LCS											

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1395986										
Nitrogen, Nitrate/Nitrite	1.00			1.01	mg/L		101	(90%-110%)	AXH3	06/19/14	11:01
QC1203109347 MB											
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/19/14	11:00
QC1203109352 350326006 PS											
Nitrogen, Nitrate/Nitrite	1.00	0.226		1.32	mg/L		109	(90%-110%)		06/19/14	11:11
Solids Analysis											
Batch	1394969										
QC1203106681 350260006 DUP											
Total Dissolved Solids		163		146	mg/L	11.1 *		(0%-10%)	MXB3	06/11/14	14:58
QC1203106684 LCS											
Total Dissolved Solids	300			289	mg/L		96.2	(95%-105%)		06/11/14	14:58
QC1203106680 MB											
Total Dissolved Solids			U	ND	mg/L					06/11/14	14:58
Titration and Ion Analysis											
Batch	1396657										
QC1203111031 350260006 DUP											
Alkalinity, Total as CaCO3		62.7		62.2	mg/L	0.823		(0%-20%)	PXO1	06/18/14	22:20
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203111037 LCS											
Alkalinity, Total as CaCO3	50.0			50.3	mg/L		101	(90%-110%)		06/18/14	20:46
QC1203111027 MB											
Alkalinity, Total as CaCO3			U	ND	mg/L					06/18/14	20:46
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1203111035 350260006 MS											
Alkalinity, Total as CaCO3	50.0	62.7		112	mg/L		98.6	(80%-120%)		06/18/14	22:23
Batch	1398487										
QC1203115516 350260006 DUP											
pH	H	7.80	H	7.78	SU	0.257		(0%-10%)	PXO1	06/25/14	12:38
QC1203115519 LCS											
pH	7.00			7.02	SU		100	(99%-101%)		06/25/14	12:29
Batch	1398576										
QC1203115768 350326006 DUP											
				370				(0%-10%)			

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1398576										
Conductivity		376			umhos/cm	1.61			EXM3	06/25/14	14:24
QC1203115770	LCS										
Conductivity	1410			1350	umhos/cm		95.3	(95%-105%)		06/25/14	14:22

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 or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 11-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 335.3, EPA 335.4, EPA 335.4 SC, SW846 9012B	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394269	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350260(2014-3510),350326(2014-3518) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS/PS: QC 1203105443MS,1203106119MS		1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.	

Originator's Name:
Aubrey Kingsbury 11-JUN-14

Data Validator/Group Leader:
Kristen Parson 11-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 17-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 365.4	Matrix Type: Liquid	Client Code: BRKL, CRPS, ESHL, LATA,
Batch ID: 1394300	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350260(2014-3510),350326(2014-3518),350328,350410(2014-3528),350413(2014-3527),350417(2014-3526) Application Issues: Failed RPD for DUP			
Specification and Requirements		DER Disposition:	
Exception Description: 1. Failed RPD for DUP: QC 1203109299DUP,1203109300DUP		1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample.	

Originator's Name:
Kristen Parson 17-JUN-14

Data Validator/Group Leader:
Aubrey Kingsbury 17-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 17-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2	Matrix Type: Liquid	Client Code: ESHL, STOL
Batch ID: 1395984	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350326(2014-3518),350404(14056213),350410(2014-3528),350413(2014-3527),350417(2014-3526) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS/PS: QC 1203109336MS,1203109338MS		1. The spike recovery falls outside of the established acceptance limits due to matrix interference. 1203109338 The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203109336	

Originator's Name:
Kristen Parson 17-JUN-14

Data Validator/Group Leader:
Aubrey Kingsbury 18-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 18-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: BALANCE	Test / Method: EPA 160.1, SM 2540C	Matrix Type: Liquid	Client Code: BATL, ESHL, UCOR, WSRB
Batch ID: 1394969	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349998,350112,350117,350118(350117-1),350260(2014-3510),350326(2014-3518) Application Issues: Container scanning event for custody missed Sample received out of holding Failed RPD for DUP			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed RPD for DUP: QC 1203106681DUP 2. Container scanning event for custody missed: 350112 009 350117 014,020 3. Sample received out of holding: 349998 001,003,005,007 QC 1203106682 DUP		1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample. 2. Samples were not scanned to the analytical batch prior to analysis; however, they were in the analyst's custody at the time of analysis. 3. Samples were received and analyzed outside of method specified holding time.	

Originator's Name:
Morgan Buckner 18-JUN-14

Data Validator/Group Leader:
Elzbieta Szulc 18-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 19-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 353.2	Matrix Type: Liquid	Client Code: ESHL, FONZ, SNLS, WSRB
Batch ID: 1395986	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350313,350326(2014-3518),350410(2014-3528),350413(2014-3527),350417(2014-3526) Application Issues: Failed Recovery for MS/PS Container scanning event for custody missed			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS/PS: QC 1203109353PS 2. Container scanning event for custody missed: 350326 006 350410 004 350413 004,006 350417 004		1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 2. Samples were inadvertently missed during the scanning process; however, the samples were in the analyst's custody during analysis.	

Originator's Name:
Aubrey Kingsbury 19-JUN-14

Data Validator/Group Leader:
Kristen Parson 19-JUN-14

DATA EXCEPTION REPORT

Mo.Day Yr. 25-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1, SW846 9040B/9040C, SW846 9040C	Matrix Type: Liquid	Client Code: BATL, ESHL, HMSA, SNLS,
Batch ID: 1398487	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350010,350260(2014-3510),350287,350326(2014-3518),350338,350413(2014-3527),350600(2014-3537),351141(2014-3594),351163(GEL351163) Application Issues: Sample received out of holding			
Specification and Requirements		DER Disposition:	
Exception Description: 1. Sample received out of holding: 350010 004 350260 006 350287 011,012,013,014,015,016,017,018 350326 006 350338 003,007 350413 004,006 350600 001 351141 012 351163 001,002,003		1. Samples were received and analyzed outside of method specified holding time.	

Originator's Name:

Patrick Orgel 25-JUN-14

Data Validator/Group Leader:

Elzbieta Szulc 27-JUN-14

Radiological Analysis

**Radiochemistry Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3518
Work Order 350326**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1395089

Sample ID	Client ID
350326003	CALA-14-79456
1203107017	Method Blank (MB)
1203107018	350410001(BDW06-14-79470) Sample Duplicate (DUP)
1203107019	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# 25.

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 1203107017 (MB) and 1203107019 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350410001 (BDW06-14-79470). The QC was from ARSL work order 350410.

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

Sample 1203107018 (BDW06-14-79470) was recounted due to high MDC. The recount is reported. Sample 350326003 (CALA-14-79456) was recounted due to a peak shift. 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.

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:	1395090

Sample ID	Client ID
350326003	CALA-14-79456
1203107020	Method Blank (MB)
1203107021	350410001(BDW06-14-79470) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

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 1203107020 (MB) and 1203107022 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350410001 (BDW06-14-79470). The QC was from ARSL work order 350410.

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 prep or reanalysis.

Recounts

Sample 350326003 (CALA-14-79456) was recounted due to high MDC. 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.

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:	1395091

Sample ID	Client ID
350326003	CALA-14-79456
1203107023	Method Blank (MB)
1203107024	350410001(BDW06-14-79470) Sample Duplicate (DUP)
1203107025	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# 25.

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 1203107023 (MB) and 1203107025 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350410001 (BDW06-14-79470). The QC was from ARSL work order 350410.

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 sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

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: 1394848

Sample ID	Client ID
350326003	CALA-14-79456
1203106456	Method Blank (MB)
1203106457	350326003(CALA-14-79456) Sample Duplicate (DUP)
1203106458	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 August 2013, November 2013 and March 2014.

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: 350326003 (CALA-14-79456). The QC was from ARSL work order 350326.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank (1203106456 (MB)) result is greater than 1.65 times the combined standard uncertainty but less than the minimum detectable concentration for Na-22.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**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:	WSP-GrossA/B
Analytical Method:	EPA 900.0/SW846 9310
Analytical Batch Number:	1395947

Sample ID	Client ID
350326003	CALA-14-79456
1203109195	Method Blank (MB)
1203109196	350417001(BDW08-14-79467) Sample Duplicate (DUP)
1203109197	350417001(BDW08-14-79467) Matrix Spike (MS)
1203109198	350417001(BDW08-14-79467) Matrix Spike Duplicate (MSD)
1203109199	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# 17.

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 1203109195 (MB) and 1203109199 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350417001 (BDW08-14-79467). The QC was from ARSL work order 350417.

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

None of the samples in this sample set were recounted.

Miscellaneous Information:**Data Exception (DER) Documentation**

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

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike and matrix spike duplicate, 1203109197 (BDW08-14-79467) and 1203109198 (BDW08-14-79467), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GFPC, Sr90, liquid

Analytical Method: EPA 905.0 Modified

Analytical Batch Number: 1399211

Sample ID	Client ID
350326003	CALA-14-79456
1203117267	Method Blank (MB)
1203117268	350326003(CALA-14-79456) Sample Duplicate (DUP)
1203117269	350326003(CALA-14-79456) Matrix Spike (MS)
1203117270	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 1203117267 (MB) and 1203117270 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350326003 (CALA-14-79456). The QC was from ARSL work order 350326.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

Sample 350326003 (CALA-14-79456) was reprepared to verify the results. The re-analysis is being reported.

Chemical Recoveries

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

Recounts

None of the samples in this sample set were recounted.

Miscellaneous Information:**Data Exception (DER) Documentation**

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

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

The matrix spike, 1203117269 (CALA-14-79456), 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.

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: 2014-3518 GEL Work Order: 350326

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: 03 JUL 2014

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Los Alamos, New Mexico 87545

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Report Date: July 3, 2014

Client Sample ID: CALA-14-79456
Sample ID: 350326003
Matrix: W
Collect Date: 06-JUN-14
Receive Date: 10-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Alpha Spec Analysis

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.006	+/-0.00529	0.0346	0.0146	+/-0.0053	0.050	pCi/L		HAKB	06/19/14	1512	1395089	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	-0.00408	+/-0.00408	0.0226	0.00851	+/-0.00409	0.050	pCi/L		HAKB	06/19/14	1512	1395090	2
Plutonium-239/240	U	0.00817	+/-0.00646	0.0372	0.0158	+/-0.00647	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		0.675	+/-0.0471	0.0819	0.0367	+/-0.0648	1.00	pCi/L		HAKB	06/13/14	1037	1395091	3
Uranium-235/236	U	0.0235	+/-0.0111	0.0687	0.029	+/-0.0112	1.00	pCi/L						
Uranium-238		0.342	+/-0.0332	0.046	0.0187	+/-0.0402	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammaspect "As Received"

Cesium-137	U	-1.47	+/-1.48	5.20	2.30	+/-1.52	8.00	pCi/L		MJH1	06/17/14	0919	1394848	4
Cobalt-60	U	0.725	+/-1.10	4.85	1.99	+/-1.11	8.00	pCi/L						
Neptunium-237	U	-0.549	+/-2.96	10.5	4.86	+/-2.96	10.0	pCi/L						
Potassium-40	U	13.8	+/-17.2	56.6	23.9	+/-17.2	10.0	pCi/L						
Sodium-22	U	0.273	+/-1.61	6.30	2.73	+/-1.61	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90		12.4	+/-0.641	0.715	0.312	+/-1.22	0.500	pCi/L		KSD1	07/01/14	1609	1399211	5
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WSP-GrossA/B "As Received"

Beta		40.5	+/-1.88	2.86	1.32	+/-3.85	3.00	pCi/L		BXF1	06/23/14	1324	1395947	6
Alpha		2.40	+/-0.681	2.08	0.962	+/-0.712	3.00	pCi/L		BXF1	06/25/14	1605	1395947	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"	1395089	85.1	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1395090	77.5	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1395091	71.2	(50%-105%)

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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: July 3, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CALA-14-79456

Project: ESHL00714

Sample ID: 350326003

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"						1399211	100	(50%-105%)				

Notes:

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

Quality Control Data

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QC Summary

Report Date: July 3, 2014

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

Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 350326

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1395089										
QC1203107018	350410001	DUP									
Americium-241	U	-0.00785	U	0.00	pCi/L	0.233		(0-1)	HAKB	06/19/1416:33	
	Uncert:	+/-0.00867		+/-0.00819							
	TPU:	+/-0.00867		+/-0.00819							
**Americium-243 Tracer	2.73	1.76		1.92	pCi/L		70.3	(50%-105%)			
	Uncert:	+/-0.0843		+/-0.080							
	TPU:	+/-0.142		+/-0.137							
QC1203107019	LCS										
Americium-241	1.41			1.51	pCi/L		107	(80%-120%)	HAKB	06/13/1410:38	
	Uncert:			+/-0.0679							
	TPU:			+/-0.0981							
**Americium-243 Tracer	2.19			1.32	pCi/L		60.5	(50%-105%)			
	Uncert:			+/-0.0813							
	TPU:			+/-0.131							
QC1203107017	MB										
Americium-241			U	0.00542	pCi/L				HAKB	06/13/1410:38	
	Uncert:			+/-0.00542							
	TPU:			+/-0.00542							
**Americium-243 Tracer	2.19			1.44	pCi/L		65.8	(50%-105%)			
	Uncert:			+/-0.0768							
	TPU:			+/-0.125							
Batch	1395090										
QC1203107021	350410001	DUP									
Plutonium-238	U	0.00	U	0.0132	pCi/L	0.417		(0-1)	HAKB	06/13/1410:37	
	Uncert:	+/-0.0049		+/-0.0108							
	TPU:	+/-0.0049		+/-0.0109							
Plutonium-239/240	U	0.004	U	0.0158	pCi/L	0.350		(0-1)			
	Uncert:	+/-0.00566		+/-0.0112							
	TPU:	+/-0.00566		+/-0.0112							
**Plutonium-242 Tracer	2.41	1.91		2.03	pCi/L		84.2	(50%-105%)			
	Uncert:	+/-0.0697		+/-0.0798							
	TPU:	+/-0.119		+/-0.132							
QC1203107022	LCS										
Plutonium-238			U	0.00844	pCi/L			(80%-120%)	HAKB	06/13/1410:37	
	Uncert:			+/-0.00517							
	TPU:			+/-0.00518							
Plutonium-239/240	1.97			2.02	pCi/L		102	(80%-120%)			
	Uncert:			+/-0.0653							
	TPU:			+/-0.109							
**Plutonium-242 Tracer	1.93			1.55	pCi/L		80.3	(50%-105%)			
	Uncert:			+/-0.064							
	TPU:			+/-0.105							

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1395090										
QC1203107020	MB										
Plutonium-238			U	-0.00206	pCi/L				HAKB	06/13/1410:37	
				Uncert: +/-0.00618							
				TPU: +/-0.00618							
Plutonium-239/240			U	0.00412	pCi/L						
				Uncert: +/-0.00582							
				TPU: +/-0.00583							
**Plutonium-242 Tracer	1.93			1.65	pCi/L		85.6	(50%-105%)			
				Uncert: +/-0.0631							
				TPU: +/-0.104							
Batch	1395091										
QC1203107024	350410001	DUP									
Uranium-234		5.55		5.93	pCi/L	0.238		(0-1)	HAKB	06/13/1410:37	
		Uncert: +/-0.124		+/-0.131							
		TPU: +/-0.380		+/-0.408							
Uranium-235/236		0.0678		0.0926	pCi/L	0.336		(0-1)			
		Uncert: +/-0.0159		+/-0.0195							
		TPU: +/-0.0165		+/-0.0204							
Uranium-238		1.41		1.56	pCi/L	0.338		(0-1)			
		Uncert: +/-0.0626		+/-0.0673							
		TPU: +/-0.111		+/-0.122							
**Uranium-232 Tracer	2.74	2.15		2.11	pCi/L		76.9	(50%-105%)			
		Uncert: +/-0.0869		+/-0.0892							
		TPU: +/-0.198		+/-0.200							
QC1203107025	LCS										
Uranium-234				2.53	pCi/L				HAKB	06/13/1410:38	
		Uncert: +/-0.0762		+/-0.0762							
		TPU: +/-0.181		+/-0.181							
Uranium-235/236				0.173	pCi/L						
		Uncert: +/-0.0227		+/-0.0227							
		TPU: +/-0.0253		+/-0.0253							
Uranium-238	2.72			2.74	pCi/L		101	(80%-120%)			
		Uncert: +/-0.0789		+/-0.0789							
		TPU: +/-0.195		+/-0.195							
**Uranium-232 Tracer	2.19			1.61	pCi/L		73.6	(50%-105%)			
		Uncert: +/-0.0709		+/-0.0709							
		TPU: +/-0.159		+/-0.159							
QC1203107023	MB										
Uranium-234			U	-0.0113	pCi/L				HAKB	06/13/1410:37	
		Uncert: +/-0.0104		+/-0.0104							
		TPU: +/-0.0104		+/-0.0104							
Uranium-235/236			U	0.00281	pCi/L						
		Uncert: +/-0.00627		+/-0.00627							
		TPU: +/-0.00628		+/-0.00628							
Uranium-238			U	0.00681	pCi/L						
		Uncert: +/-0.00879		+/-0.00879							
		TPU: +/-0.0088		+/-0.0088							

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1395091										
*Uranium-232 Tracer	2.19			1.70	pCi/L		77.5	(50%-105%)			
	Uncert:			+/-0.071							
	TPU:			+/-0.159							
Rad Gamma Spec											
Batch	1394848										
QC1203106457	350326003	DUP									
Cesium-137	U	-1.47	U	2.05	pCi/L	0.555		(0-1)	MJH1	06/17/1411:25	
	Uncert:	+/-1.48		+/-1.58							
	TPU:	+/-1.52		+/-1.65							
Cobalt-60	U	0.725	U	-0.802	pCi/L	0.260		(0-1)			
	Uncert:	+/-1.10		+/-1.82							
	TPU:	+/-1.11		+/-1.83							
Neptunium-237	U	-0.549	U	-0.573	pCi/L	0.00199		(0-1)			
	Uncert:	+/-2.96		+/-2.89							
	TPU:	+/-2.96		+/-2.90							
Potassium-40	U	13.8	U	-5.02	pCi/L	0.244		(0-1)			
	Uncert:	+/-17.2		+/-21.2							
	TPU:	+/-17.2		+/-21.2							
Sodium-22	U	0.273	U	-0.296	pCi/L	0.088		(0-1)			
	Uncert:	+/-1.61		+/-1.63							
	TPU:	+/-1.61		+/-1.63							
QC1203106458	LCS										
Americium-241	34500			33800	pCi/L		98	(80%-120%)	MJH1	06/17/1410:40	
	Uncert:			+/-369							
	TPU:			+/-2260							
Cesium-137	14100			14200	pCi/L		101	(80%-120%)			
	Uncert:			+/-212							
	TPU:			+/-612							
Cobalt-60	17600			18100	pCi/L		102	(80%-120%)			
	Uncert:			+/-250							
	TPU:			+/-766							
Neptunium-237			U	-8.64	pCi/L						
	Uncert:			+/-96.1							
	TPU:			+/-96.1							
Potassium-40			U	-94.5	pCi/L						
	Uncert:			+/-188							
	TPU:			+/-189							
Sodium-22			U	94.1	pCi/L						
	Uncert:			+/-52.5							
	TPU:			+/-52.7							
QC1203106456	MB										
Cesium-137			U	0.351	pCi/L				MJH1	06/17/1410:48	
	Uncert:			+/-1.21							
	TPU:			+/-1.21							
Cobalt-60			U	-0.547	pCi/L						
	Uncert:			+/-1.11							

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1394848										
Neptunium-237	TPU:			+/-1.11							
			U	-0.244	pCi/L						
	Uncert:			+/-2.54							
Potassium-40	TPU:			+/-2.54							
			U	-12.4	pCi/L						
	Uncert:			+/-16.1							
Sodium-22	TPU:			+/-16.4							
			U	2.16	pCi/L						
	Uncert:			+/-1.26							
	TPU:			+/-1.26							
Rad Gas Flow											
Batch	1395947										
QC1203109196	350417001	DUP									
Alpha			13.1	12.9	pCi/L	0.0393		(0-1)	BXF1	06/25/1416:01	
	Uncert:		+/-0.924	+/-0.883							
	TPU:		+/-1.44	+/-1.41							
Beta			7.83	6.14	pCi/L	0.467		(0-1)		06/22/1413:49	
	Uncert:		+/-0.697	+/-0.653							
	TPU:		+/-0.977	+/-0.831							
QC1203109199	LCS										
Alpha	12.3			11.6	pCi/L		93.8	(80%-120%)	BXF1	06/25/1416:00	
	Uncert:			+/-0.655							
	TPU:			+/-1.18							
Beta	45.2			52.1	pCi/L		115	(80%-120%)		06/22/1412:13	
	Uncert:			+/-0.936							
	TPU:			+/-4.42							
QC1203109195	MB										
Alpha			U	-0.059	pCi/L				BXF1	06/25/1416:01	
	Uncert:			+/-0.0301							
	TPU:			+/-0.0301							
Beta			U	-0.168	pCi/L					06/22/1413:53	
	Uncert:			+/-0.0709							
	TPU:			+/-0.0709							
QC1203109197	350417001	MS									
Alpha	165	13.1		190	pCi/L		108	(75%-125%)	BXF1	06/25/1416:00	
	Uncert:		+/-0.924	+/-11.9							
	TPU:		+/-1.44	+/-20.3							
Beta	603	7.83		707	pCi/L		116	(75%-125%)		06/22/1412:13	
	Uncert:		+/-0.697	+/-13.0							
	TPU:		+/-0.977	+/-60.2							
QC1203109198	350417001	MSD									
Alpha	165	13.1		196	pCi/L	0.0692	111	(0-1)	BXF1	06/25/1416:00	
	Uncert:		+/-0.924	+/-11.3							
	TPU:		+/-1.44	+/-20.0							
Beta	603	7.83		602	pCi/L	0.470	98.4	(0-1)		06/22/1412:13	
	Uncert:		+/-0.697	+/-12.1							

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1395947										
		TPU:	+/-0.977	+/-51.6							
Batch	1399211										
QC1203117268	350326003	DUP									
Strontium-90			12.4	17.4	pCi/L	0.878		(0-1)	KSD1	07/01/14	16:09
		Uncert:	+/-0.641	+/-0.789							
		TPU:	+/-1.22	+/-1.62							
**Strontium Carrier		8.20	8.20	7.60	mg		92.7	(50%-105%)			
QC1203117270	LCS										
Strontium-90		22.6		23.9	pCi/L		106	(80%-120%)	KSD1	07/01/14	16:09
		Uncert:		+/-0.662							
		TPU:		+/-2.04							
**Strontium Carrier		8.20		8.10	mg		98.8	(50%-105%)			
QC1203117267	MB										
Strontium-90			U	0.0664	pCi/L				KSD1	07/01/14	16:08
		Uncert:		+/-0.0969							
		TPU:		+/-0.097							
**Strontium Carrier		8.20		7.60	mg		92.7	(50%-105%)			
QC1203117269	350326003	MS									
Strontium-90		226	12.4	244	pCi/L		103	(75%-125%)	KSD1	07/01/14	16:09
		Uncert:	+/-0.641	+/-6.70							
		TPU:	+/-1.22	+/-20.8							
**Strontium Carrier		8.20	8.20	8.00	mg		97.6	(50%-105%)			

Notes:

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

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMF Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected

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QC Summary

Workorder: 350326

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
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 or %RPD not applicable.

** Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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