

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4563 EVENT NAME: Ancho (MDA AB Monitoring)
 Q2 MY2014 Sampling Event
 SAMPLE ID: CAAN-14-54787 WORK ORDER:

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		03/05/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		11:32	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-30		↓	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
N/A	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NONE
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓

SAMPLE COMMENTS: NONE

LOCATION COMMENTS: Generator ~40' away

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) 3/5/14 GPM Oxidation-Reduction Potential _____ mV
 pH _____ SU Specific Conductance _____ uS/cm Temperature _____ deg C
 Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz, M. Green

RELINQUISHED BY (Printed Name) Julie Maza (Signature) <i>Julie Maza</i>	Date/Time 03/05/2014 13:00	RECEIVED BY (Printed Name) J. Montoya (Signature) <i>J. Montoya</i>	Date/Time 03/05/2014 13:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4563 EVENT NAME: Ancho (MDA AB Monitoring)
 Q2 MY2014 Sampling Event
 SAMPLE ID: CAAN-14-54789 WORK ORDER: NA

	<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):		03/05/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		11:32	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-30		↓	FIELD PREP:	UF	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	MSGP-Hg	1 LITER POLY	1	HNO3	y	NONE
↓	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	HCL H ₂ O ₂	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-8270C-SVOA	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-8321A-NMED HEXP	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	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4563

EVENT NAME:

Ancho (MDA AB Monitoring)

Q2 MY2014 Sampling Event

SAMPLE ID: CAAN-14-54789

WORK ORDER:

NA

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

SAMPLE COMMENTS: NONE

LOCATION COMMENTS: Generator ~40' away

FIELD PARAMETERS:

Dissolved Oxygen 7.14 mg/L Flow (in gpm) 5.17 GPM Oxidation-Reduction Potential 157.7 mV
 pH 8.11 SU Specific Conductance 121 uS/cm Temperature 19.00 deg C
 Turbidity 0.6 NTU

COLLECTED BY (PRINT) D. Fellenz, M. Green

RELINQUISHED BY (Printed Name) Julie Maze (Signature) <i>Julie Maze</i>	Date/Time 03/05/2014 13:00	RECEIVED BY (Printed Name) <i>Julie Maze</i> (Signature) <i>Julie Maze</i>	Date/Time 03/05/2014 13:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 02/27/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4563 EVENT NAME: Ancho (MDA AB Monitoring)
Q2 MY2014 Sampling Event
SAMPLE ID: CAAN-14-54791 WORK ORDER: NA

	<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):		03/05/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		11:32	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-30		↓	FIELD PREP:	F	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NONE
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS: NONE

LOCATION COMMENTS: Generator ~40' away

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L Flow (in gpm) _____ GPM Oxidation-Reduction Potential _____ mV
pH _____ SU Specific Conductance 420 uS/cm Temperature _____ deg C
Turbidity _____ NTU 3/5/14

COLLECTED BY (PRINT) D. Fellenz, M. Green

RELINQUISHED BY (Printed Name) Julie Maze (Signature) <i>Julie Maze</i>	Date/Time 03/05/2014 13:00	RECEIVED BY (Printed Name) M. Montoya (Signature) <i>M. Montoya</i>	Date/Time 03/05/2014 13:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 02/27/2014

DATA VALIDATION REPORT

Chain Of Custody No. 2014-2944

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
344112	EPA:120.1	1				
344112	EPA:150.1	1				
344112	EPA:160.1	1				
344112	EPA:245.2	2				
344112	EPA:300.0	1				
344112	EPA:310.1	1				
344112	EPA:335.4	1				
344112	EPA:350.1	1				
344112	EPA:351.2	1				
344112	EPA:353.2	1				
344112	EPA:365.4	1				
344112	EPA:900	1				
344112	EPA:901.1	1				
344112	EPA:905.0	1				
344112	HASL-300:AM-241	1				
344112	HASL-300:ISOPU	1				
344112	HASL-300:ISOU	1				
344112	SM:A2340B	1				
344112	SW-846:6010B	1				
344112	SW-846:6020	1				
344112	SW-846:6850	1				
344112	SW-846:8011	1		1		
344112	SW-846:8081A	1				
344112	SW-846:8151A	1				
344112	SW-846:8260B	1		1		
344112	SW-846:8270C	1				
344112	SW-846:8310	1				
344112	SW-846:8321A_MOD	1				
344112	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
344112	EPA:120.1	1374269	1374269	1										1			1				
344112	EPA:150.1	1372322	1372322	1										1			1				
344112	EPA:160.1	1371765	1371765	1					1					1			2				
344112	EPA:245.2	1374901	1374898	2					1	1				1			1				
344112	EPA:300.0	1370700	1370700	1					1					1			1				
344112	EPA:310.1	1372687	1372687	1					1	1				1	1		1				
344112	EPA:335.4	1371453	1371452	1					1	1				1			1				
344112	EPA:350.1	1371472	1371471	1					1	1				1			1				
344112	EPA:351.2	1370749	1370748	1					1	2				1			2				
344112	EPA:353.2	1372110	1372110	1					1					1			1				
344112	EPA:365.4	1370747	1370746	1					1	2				1			2				
344112	EPA:900	1374043	1374043	1					1	1	1			1			1				
344112	EPA:901.1	1370818	1370818	1					1					1			1				
344112	EPA:905.0	1374041	1374041	1					1	1				1			1				
344112	HASL-300:AM-241	1371047	1371047	1					1					1			1				
344112	HASL-300:ISOPU	1371050	1371050	1					1					1			1				
344112	HASL-300:ISOU	1371056	1371056	1					1					1			1				
344112	SM:A2340B	1375893	1375893	1																	
344112	SW-846:6010B	1371203	1371201	1					1	1				1			1				
344112	SW-846:6020	1371200	1371199	1					1	1				1			1				
344112	SW-846:6850	1371025	1371024	1					1	1	1			1							
344112	SW-846:8011	1370963	1370962	1		1			1					1	1						
344112	SW-846:8081A	1371568	1371567	1					1	1				1	1						
344112	SW-846:8151A	1370893	1370892	1					1	1				1	1						
344112	SW-846:8260B	1373110	1373110	1		1			3					6							
344112	SW-846:8270C	1371072	1371071	1					1	1	1			1							
344112	SW-846:8310	1370891	1370888	1					1	1				1	1						
344112	SW-846:8321A_MOD	1372044	1372042	1					1	1	1			1							
344112	SW-846:9060	1371704	1371704	1					1					1			1				

DATA VALIDATION REPORT

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAWA-14-54762	1203054270	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203054269	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAWA-14-54759	1203049844	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203049842	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAAN-14-54791	1203048355	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAWA-14-54707	1203048572	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203048356	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203048354	MB	1	0	0	0
EPA:245.2	INORGANIC	CAAN-14-54789	344112004	REG	1	0	0	0
EPA:245.2	INORGANIC	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203055608	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203055607	MB	1	0	0	0
EPA:245.2	INORGANIC	WST22-14-56560	1203055609	DUP	1	0	0	0
EPA:245.2	INORGANIC	WST22-14-56560	1203055610	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAWA-14-54773	1203045864	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203045866	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203045863	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAAN-14-54791	1203051077	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAAN-14-54791	1203051078	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203050682	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCSD	1203050683	LCSD	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203050681	MB	2	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAAN-14-54789	1203047737	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAAN-14-54789	1203047741	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAAN-14-54789	344112004	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203047744	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203047735	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-14-54772	1203047776	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAWA-14-54772	1203047778	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203047779	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203047774	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAAN-14-54789	344112004	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	CAWA-14-54709	1203045944	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAWA-14-54709	1203045945	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203045943	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203045942	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	SWWS46-14-55783	1203046787	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	SWWS46-14-55783	1203046788	MS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAWA-14-54753	1203049256	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203049259	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203049254	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAAN-14-54791	344112007	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54709	1203045939	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54709	1203045940	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54772	1203046785	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAWA-14-54772	1203046786	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203045938	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203045937	MB	1	0	0	0
EPA:900	RAD	CAAN-14-54789	344112004	REG	2	0	0	0
EPA:900	RAD	CAWA-14-54704	1203053745	DUP	2	0	0	0
EPA:900	RAD	CAWA-14-54704	1203053746	MS	0	0	2	0
EPA:900	RAD	CAWA-14-54704	1203053747	MSD	0	0	2	0
EPA:900	RAD	LCS	1203053748	LCS	0	0	2	0
EPA:900	RAD	MB	1203053744	MB	2	0	0	0
EPA:901.1	RAD	CAAN-14-54789	344112004	REG	5	0	0	0
EPA:901.1	RAD	CAWA-14-54752	1203046143	DUP	5	0	0	0
EPA:901.1	RAD	LCS	1203046144	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203046142	MB	5	0	0	0
EPA:905.0	RAD	CAAN-14-54789	344112004	REG	1	0	0	0
EPA:905.0	RAD	CAPA-14-54777	1203053725	DUP	1	0	0	0
EPA:905.0	RAD	CAPA-14-54777	1203053726	MS	0	0	1	0
EPA:905.0	RAD	LCS	1203053727	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203053724	MB	1	0	0	0
HASL-300:AM-241	RAD	CAAN-14-54789	1203046679	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAAN-14-54789	344112004	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203046680	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203046678	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAAN-14-54789	1203046697	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAAN-14-54789	344112004	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203046698	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203046696	MB	2	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
HASL-300:ISOU	RAD	CAAN-14-54789	1203046700	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAAN-14-54789	344112004	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203046701	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203046699	MB	3	0	0	0
SM:A2340B	INORGANIC	CAAN-14-54791	344112007	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAAN-14-54791	344112007	REG	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1203047081	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1203047080	MB	17	0	0	0
SW-846:6010B	INORGANIC	WST22-14-56560	1203047082	DUP	17	0	0	0
SW-846:6010B	INORGANIC	WST22-14-56560	1203047083	MS	0	0	17	0
SW-846:6020	INORGANIC	CAAN-14-54791	344112007	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203047071	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203047070	MB	11	0	0	0
SW-846:6020	INORGANIC	WST22-14-56560	1203047072	DUP	11	0	0	0
SW-846:6020	INORGANIC	WST22-14-56560	1203047073	MS	0	0	11	0
SW-846:6850	LCMS/MS PERCHLORATE	CAAN-14-54791	344112007	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-14-54773	1203046619	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAWA-14-54773	1203046620	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203046618	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203046617	MB	1	0	0	0
SW-846:8011	VOC	CAAN-14-54787	344112008	FTB	2	1	0	0
SW-846:8011	VOC	CAAN-14-54789	344112001	REG	2	1	0	0
SW-846:8011	VOC	LCS	1203046504	LCS	0	1	2	0
SW-846:8011	VOC	LCSD	1203046505	LCSD	0	1	2	0
SW-846:8011	VOC	MB	1203046503	MB	2	1	0	0
SW-846:8081A	PESTPCB	CAAN-14-54789	1203047971	MS	0	2	1	0
SW-846:8081A	PESTPCB	CAAN-14-54789	344112005	REG	1	2	0	0
SW-846:8081A	PESTPCB	LCS	1203047970	LCS	0	2	1	0
SW-846:8081A	PESTPCB	LCSD	1203047973	LCSD	0	2	1	0
SW-846:8081A	PESTPCB	MB	1203047969	MB	1	2	0	0
SW-846:8151A	HERB	CAAN-14-54789	344112006	REG	1	1	0	0
SW-846:8151A	HERB	CAWA-14-54752	1203046322	MS	0	1	1	0
SW-846:8151A	HERB	LCS	1203046321	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203046324	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203046320	MB	1	1	0	0
SW-846:8260B	VOC	CAAN-14-54787	344112009	FTB	78	3	0	0
SW-846:8260B	VOC	CAAN-14-54789	344112004	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203051447	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203051448	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203060131	LCS	0	3	68	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8260B	VOC	LCS	1203060132	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203060134	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203060135	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203051444	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203060130	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203060133	MB	78	3	0	0
SW-846:8270C	SVOC	CAAN-14-54789	344112004	REG	60	6	0	0
SW-846:8270C	SVOC	CAWA-14-54752	1203047900	MS	0	6	56	0
SW-846:8270C	SVOC	CAWA-14-54752	1203047901	MSD	0	6	56	0
SW-846:8270C	SVOC	LCS	1203046758	LCS	0	6	56	0
SW-846:8270C	SVOC	MB	1203046757	MB	60	6	0	0
SW-846:8310	SVOC	CAAN-14-54789	344112002	REG	18	1	0	0
SW-846:8310	SVOC	CAWA-14-54752	1203046317	MS	0	1	18	0
SW-846:8310	SVOC	LCS	1203046316	LCS	0	1	18	0
SW-846:8310	SVOC	LCSD	1203046319	LCSD	0	1	18	0
SW-846:8310	SVOC	MB	1203046315	MB	18	1	0	0
SW-846:8321A_MOD	LCMS/MS HIGH	CAAN-14-54789	344112003	REG	20	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH	CAWA-14-54783	1203049043	MS	0	2	20	0
SW-846:8321A_MOD	LCMS/MS HIGH	CAWA-14-54783	1203049044	MSD	0	2	20	0
SW-846:8321A_MOD	LCMS/MS HIGH	LCS	1203049045	LCS	0	2	20	0
SW-846:8321A_MOD	LCMS/MS HIGH	MB	1203049042	MB	20	2	0	0
SW-846:9060	GENERAL CHEMISTRY	CAAN-14-54789	1203048256	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAAN-14-54789	344112004	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203048260	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203048255	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

DATA VALIDATION REPORT

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203045937	METHOD BLANK	EPA:365.4	W	Total Phosphate as Phosphorus	0.0465	J	mg/L	0.050

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAAN-14-54791	1203045937	METHOD BLANK	EPA:365.4	Total Phosphate as Phosphorus	0.0465	mg/L	0.0893		0.050	Y	5		Y

6. Any surrogate recoveries outside the control limits?

No.

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

Field Sample ID	MS Lab Sample ID	MSD Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Sample Matrix	MS Spike Recovery	MSD Spike Recovery	MS Upper Limit	MS Lower Limit	MS Reject Limit	RPD	RPD Limit
CAWA-14-54709	1203045945		EPA:351.2	Total Kjeldahl Nitrogen	1370748	03-11-2014	W	111		110	90	10		
SWWS46-14-55783	1203046788		EPA:351.2	Total Kjeldahl Nitrogen	1370748	03-11-2014	W	59		110	90	10		
CAAN-14-54789	1203047971		SW-846:8081A	Hexachlorobenzene	1371567	03-11-2014	W	0		150	50	10		

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

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
1203051447		SW-846:8260B	Dichlorodifluoromethane	1373110	03-15-2014	W	46		129	58		10		
1203051447		SW-846:8260B	Vinyl acetate	1373110	03-15-2014	W	71		130	78		10		
1203051448		SW-846:8260B	Trichloro-1,2,2-trifluoroethane	1373110	03-15-2014	W	137		132	73		10		
1203060131		SW-846:8260B	Dichlorodifluoromethane	1373110	03-14-2014	W	48		129	58		10		
1203060131		SW-846:8260B	Vinyl acetate	1373110	03-14-2014	W	68		130	78		10		
1203060134		SW-846:8260B	Dichlorodifluoromethane	1373110	03-14-2014	W	47		129	58		10		
1203060134		SW-846:8260B	Vinyl acetate	1373110	03-14-2014	W	69		130	78		10		
1203046758		SW-846:8270C	Nitroaniline[4-]	1371071	03-11-2014	W	134		133	38		10		
1203046316	1203046319	SW-846:8310	Acenaphthene	1370888	03-11-2014	W	71	56	107	53		10	24	20
1203046316	1203046319	SW-846:8310	Acenaphthylene	1370888	03-11-2014	W	72	55	100	52		10	26	20
1203046316	1203046319	SW-846:8310	Benzo(g,h,i)perylene	1370888	03-11-2014	W	59	46	115	42		10	25	20
1203046316	1203046319	SW-846:8310	Benzo(k)fluoranthene	1370888	03-11-2014	W	82	67	130	70		10	20	20
1203046316	1203046319	SW-846:8310	Dibenz(a,h)anthracene	1370888	03-11-2014	W	54	39	118	30		10	31	20
1203046316	1203046319	SW-846:8310	Indeno(1,2,3-cd)pyrene	1370888	03-11-2014	W	90	66	114	57		10	31	20
1203046316	1203046319	SW-846:8310	Methylnaphthalene[1-]	1370888	03-11-2014	W	63	43	96	55		10	37	20
1203046316	1203046319	SW-846:8310	Methylnaphthalene[2-]	1370888	03-11-2014	W	70	50	91	50		10	34	20
1203046316	1203046319	SW-846:8310	Naphthalene	1370888	03-11-2014	W	61	42	108	54		10	37	26

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

DATA VALIDATION REPORT

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-30	2014-2944	CAAN-14-54787	FTB	INIT	VOC	SW-846.8260B	Dichlorodifluoromethane	U	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/05/2014		1373110	VAL	Y
R-30	2014-2944	CAAN-14-54787	FTB	INIT	VOC	SW-846.8260B	Vinyl acetate	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/05/2014		1373110	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	HASL-300-AM-241	Americium-241	U	U	R5	N	.00853	pCi/L	.00853	pCi/L	0.0427	0.00603	W	03/05/2014		1371047	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	SVOC	SW-846.8310	Benzo(k)fluoranthene	U	UJ	SV12a	N	0.0266	ug/L	0.0266	ug/L			W	03/05/2014		1370891	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	1.31	pCi/L	1.31	pCi/L	5.84	1.48	W	03/05/2014		1370818	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	2.65	pCi/L	2.65	pCi/L	5.07	1.28	W	03/05/2014		1370818	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	VOC	SW-846.8260B	Dichlorodifluoromethane	U	UJ	V12a	N	1.00	ug/L	1.00	ug/L			W	03/05/2014		1373110	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	-.29	pCi/L	-.29	pCi/L	1.99	0.418	W	03/05/2014		1374043	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N	.862	pCi/L	.862	pCi/L	1.99	0.601	W	03/05/2014		1374043	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	PESTPCB	SW-846.8081A	Hexachlorobenzene	U	NQ	P12d	N	0.0211	ug/L	0.0211	ug/L			W	03/05/2014		1371568	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	SVOC	SW-846.8310	Methylnaphthalene[1-]	U	UJ	SV12a	N	0.532	ug/L	0.532	ug/L			W	03/05/2014		1370891	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	SVOC	SW-846.8310	Naphthalene	U	UJ	SV12a	N	0.532	ug/L	0.532	ug/L			W	03/05/2014		1370891	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-.0315	pCi/L	-.0315	pCi/L	9.71	2.70	W	03/05/2014		1370818	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00299	pCi/L	-.00299	pCi/L	0.0385	0.00518	W	03/05/2014		1371050	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	-.00598	pCi/L	-.00598	pCi/L	0.0878	0.00598	W	03/05/2014		1371050	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	35.7	pCi/L	35.7	pCi/L	64.0	19.2	W	03/05/2014		1370818	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	.565	pCi/L	.565	pCi/L	5.50	1.33	W	03/05/2014		1370818	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	.357	pCi/L	.357	pCi/L	0.452	0.146	W	03/05/2014		1374041	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	.0162	pCi/L	.0162	pCi/L	0.0415	0.00859	W	03/05/2014		1371056	VAL	Y
R-30	2014-2944	CAAN-14-54789	REG	INIT	VOC	SW-846.8260B	Vinyl acetate	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	03/05/2014		1373110	VAL	Y
R-30	2014-2944	CAAN-14-54791	REG	INIT	GENERAL CHEMISTRY	EPA:365.4	Total Phosphate as Phosphorus	U	U	14	N	0.0893	mg/L	0.0893	mg/L			W	03/05/2014		1370747	VAL	Y

Reason Code

Description

14

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

J_LAB

The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL

NQ

The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.

DATA VALIDATION REPORT

Reason Code

Description

R5	Analyte is not detected because the amount reported is less than the MDC.
SV12a	The LCS percent recovery was < the LAL but > 10%. Follow the external laboratory limits located within the associated data package.
U_LAB	The analytical laboratory qualified the analyte as not detected.
V12a	The LCS percent recovery was < the LAL but > 10%. Follow the external laboratory limits located within the associated data package.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAAN-14-54787	R-30	FTB	SW-846:8011	0	2
CAAN-14-54787	R-30	FTB	SW-846:8260B	0	78
CAAN-14-54789	R-30	REG	EPA:245.2	0	1
CAAN-14-54789	R-30	REG	EPA:335.4	0	1
CAAN-14-54789	R-30	REG	EPA:351.2	0	1
CAAN-14-54789	R-30	REG	EPA:900	0	2
CAAN-14-54789	R-30	REG	EPA:901.1	0	5
CAAN-14-54789	R-30	REG	EPA:905.0	0	1
CAAN-14-54789	R-30	REG	HASL-300:AM-241	0	1
CAAN-14-54789	R-30	REG	HASL-300:ISOPU	0	2
CAAN-14-54789	R-30	REG	HASL-300:ISOU	0	3
CAAN-14-54789	R-30	REG	SW-846:8011	0	2
CAAN-14-54789	R-30	REG	SW-846:8081A	0	1
CAAN-14-54789	R-30	REG	SW-846:8151A	0	1
CAAN-14-54789	R-30	REG	SW-846:8260B	0	78
CAAN-14-54789	R-30	REG	SW-846:8270C	0	60
CAAN-14-54789	R-30	REG	SW-846:8310	0	18
CAAN-14-54789	R-30	REG	SW-846:8321A_MOD	0	20
CAAN-14-54789	R-30	REG	SW-846:9060	0	1
CAAN-14-54791	R-30	REG	EPA:120.1	0	1
CAAN-14-54791	R-30	REG	EPA:150.1	0	1
CAAN-14-54791	R-30	REG	EPA:160.1	0	1
CAAN-14-54791	R-30	REG	EPA:245.2	0	1
CAAN-14-54791	R-30	REG	EPA:300.0	0	4
CAAN-14-54791	R-30	REG	EPA:310.1	0	2
CAAN-14-54791	R-30	REG	EPA:350.1	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAAN-14-54791	R-30	REG	EPA:353.2	0	1
CAAN-14-54791	R-30	REG	EPA:365.4	0	1
CAAN-14-54791	R-30	REG	SM:A2340B	0	1
CAAN-14-54791	R-30	REG	SW-846:6010B	0	17
CAAN-14-54791	R-30	REG	SW-846:6020	0	11
CAAN-14-54791	R-30	REG	SW-846:6850	0	1



April 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: 344112
SDG: 2014-2944

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on March 07, 2014, and analyzed for Explosives by LCMSMS, GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2014-2944
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 344112
SDG: 2014-2944

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 344112
SDG # : 2014-2944**

April 03, 2014

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on March 07, 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>
344112001	CAAN-14-54789
344112002	CAAN-14-54789
344112003	CAAN-14-54789
344112004	CAAN-14-54789
344112005	CAAN-14-54789
344112006	CAAN-14-54789
344112007	CAAN-14-54791
344112008	CAAN-14-54787
344112009	CAAN-14-54787

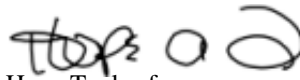
Case Narrative

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

Data Package

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

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

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 April 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122013-11
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Chain of Custody and Supporting Documentation

SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANL</u>		SDG/AR/COC/Work Order: <u>2014-2944</u>	
Received By: <u>H. Taylor</u>		Date Received: <u>030714</u>	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?			Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?			If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?			
Package, COC, and/or Samples marked as beryllium or asbestos containing?			If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?			Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?			

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<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"/>	<input checked="" type="checkbox"/>		Preservation Method: Ice bags <u>Blue ice</u> Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Temperature Device Serial #: <u>130462966</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<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"/>	<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"/>	<input checked="" type="checkbox"/>		Sample ID's and containers affected:
7 Are Encore containers present?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sample ID's affected: <u>* see Continuation</u>
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
14 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other <u>5908 1776 7487-3</u> <u>7476-4</u> <u>7532-4</u> <u>7498-5</u> <u>7465-15</u>

Comments (Use Continuation Form if needed):

Client: LANL Received By: H. Taylor Date Received: 03/07/14 SDG/AR/COC/Work Order: 2014-2944

RN 2014-2943

* CAWA-14-54732

received 2 containers for HEXP, chain indicates 3

received 1 container for SVOA, chain indicates 4

received

* CAWA-14-54710

received 1 container for BOLL, chain indicates 2

received 2 containers for B260, chain indicates 4

RN 2014-2944

* CAWA-14-54789

received 2 containers for HEXP, chain indicates 3

received 3 containers for SVOA, chain indicates 4

* CAWA-14-54787

received 1 container for BOLL, chain indicates 2

received 2 containers for B260, chain indicates 4

RN 2014-2953

* WST16-14-56555 received 1 container, chain indicates 2

Subject: Sample Receipt for 030714
From: Hope Taylor <Hope.Taylor@gel.com>
Date: 3/8/2014 8:00 AM
To: "Keith R. Greene" <kgreene@lanl.gov>, LANL@amrad.com
CC: "team.davis" <team.davis@gel.com>

RN 2014-2943

CAWA-14-54732

received 2 containers for HEXP, chain indicates 3
received 1 container for SVOA, chain indicates 4

CAWA-14-54710

received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4

RN 2014-2944

CAWA-14-54789

received 2 containers for HEXP, chain indicates 3
received 3 containers for SVOA, chain indicates 4

CAWA-14-54787

received 1 container for 8011, chain indicates 2
received 2 containers for 8260, chain indicates 4

RN 2014-2953

WST16-14-56555 received 1 container, chain indicates 2

--
Hope Taylor
Project Manager Assistant
GEL Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Direct: 843.769.7376 ext. 4778
Main: 843.556.8171
Fax: 843.766.1178
E-mail: hop01200@gel.com
Web: www.gel.com

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

SHIP DATE: 06MAR14
ACTWGT: 35.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

LOS ALAMOS, NM 87545
UNITED STATES US

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

CHARLESTON SC 29407

(843) 566-8171
REF: MR1A015AGWJO

3c



FedEx
Express



FRI - 07 MAR 10:30A
PRIORITY OVERNIGHT

2 of 2
MPS# 5908 1776 7498
0263
Mstr# 5908 1776 7487

0201

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

SHIP DATE: 06MAR14
ACTWGT: 47.0 LB MAN
CAD: 0014176/CAFE2704

BILL SENDER

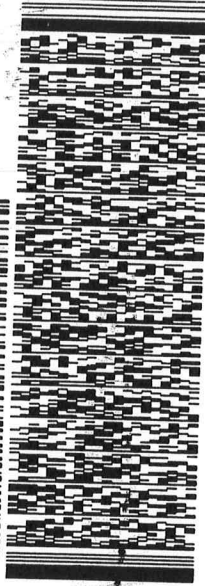
LOS ALAMOS, NM 87545
UNITED STATES US

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

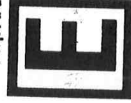
CHARLESTON SC 29407

(843) 566-8171
REF: MR1A015AGWJO

3c



FedEx
Express



FRI - 07 MAR 10:30A
PRIORITY OVERNIGHT

1 of 2
TRK# 5908 1776 7487
0201
MASTER

XX CHSA

29407
SC-US CHS



Part # 156148-434 RIT2 10/11

ORIGIN ID: SAFA (505) 665-9966
SHIP DATE: 06MARI4
ACTWGT: 29.0 LB MAN
CAD: 0014176/CAFE2704

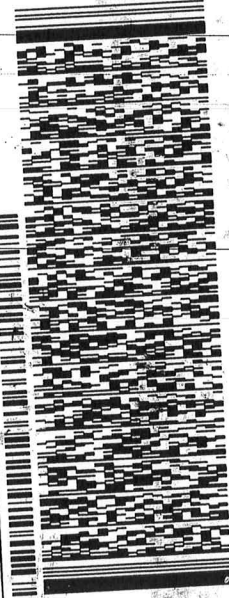
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171
REF: MR1A015AGWHO

FedEx
Express



FRI - 07 MAR 10:30A
PRIORITY OVERNIGHT

1 of 2

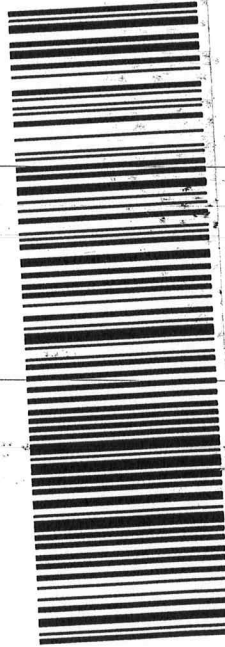
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0201

MASTER

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 10/11

ORIGIN ID: SAFA (505) 665-9966

SHIP DATE: 06MARI4
ACTWGT: 48.0 LB MAN
CAD: 0014176/CAFE2704

LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

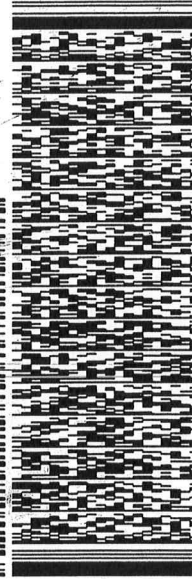
TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: MR1A015AGWHO

FedEx
Express



FRI - 07 MAR 10:30A
PRIORITY OVERNIGHT

2 of 2

MPS# 5908 1776 7476

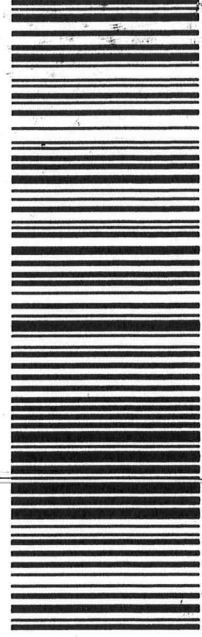
0263

Mstr# 5908 1776 7465

0201

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 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: 06MAR14
ACTWGT: 46.0 LB MAN
CAD: 0014176/CAFE2704

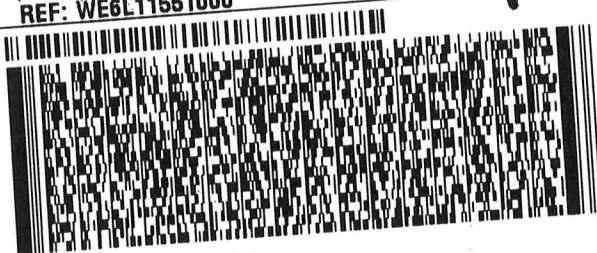
BILL SENDER

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

CHARLESTON SC 29407

(843) 666-8171

REF: WE6L11551000



FedEx
Express



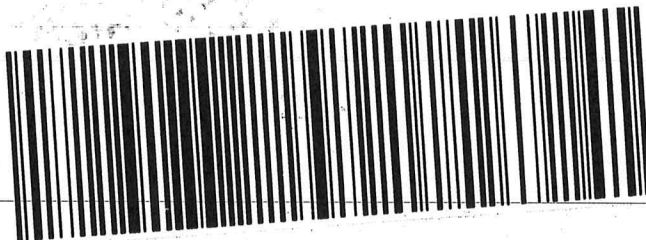
TRK# 5908 1776 7502
0201

FRI - 07 MAR 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Post # 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 2014-2944**

Method/Analysis Information

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

Analytical Method: SW846 8260B DOE-AL

Analytical Batch Number: 1373110

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
344112004	CAAN-14-54789
344112009	CAAN-14-54787
1203051445	343999004(CAWA-14-54738) Post Spike (PS)
1203051446	343999004(CAWA-14-54738) Post Spike Duplicate (PSD)
1203051449	343999004(CAWA-14-54738) Post Spike (PS)
1203051450	343999004(CAWA-14-54738) Post Spike Duplicate (PSD)
1203060133	Method Blank (MB)
1203060134	Laboratory Control Sample (LCS)
1203060135	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 1203060134 (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 343999004 (CAWA-14-54738) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike 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 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: 1279174.

Manual Integrations

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

TIC Comment

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

Additional Comments

Additional comments were not required for this SDG.

Residual Chlorine

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

System Configuration

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112

The Qualifiers in this report are defined as follows:

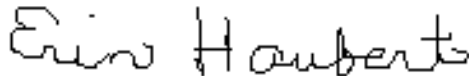
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- 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: 02 APR 2014

Title: Data Validator

Sample Data Summary

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-2944

Lab Sample ID: 344112004

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client ID: CAAN-14-54789

Batch ID: 1373110

Run Date: 03/15/2014 03:44

Prep Date: 03/15/2014 03:44

Data File: 031414V6\6Z547.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA6.I

Analyst: GRB2

Column: DB-624

Project: ESHL00714

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
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: 2014-2944

Lab Sample ID: 344112004

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAAN-14-54789

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1373110

Inst: VOA6.I

Dilution: 1

Run Date: 03/15/2014 03:44

Analyst: GRB2

Purge Vol: 5 mL

Prep Date: 03/15/2014 03:44

Data File: 031414V6\6Z547.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**

Page 3 of 3

SDG Number: 2014-2944

Lab Sample ID: 344112004

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAAN-14-54789

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1373110

Inst: VOA6.I

Dilution: 1

Run Date: 03/15/2014 03:44

Analyst: GRB2

Purge Vol: 5 mL

Prep Date: 03/15/2014 03:44

Column: DB-624

Data File: 031414V6\6Z547.D

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	56.6	50.0	ug/L	113	(78%-124%)
Bromofluorobenzene	60.0	50.0	ug/L	120	(80%-120%)
Toluene-d8	53.3	50.0	ug/L	107	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	13.848	15.4	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-2944

Lab Sample ID: 344112009

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client ID: CAAN-14-54787

Batch ID: 1373110

Run Date: 03/15/2014 04:13

Prep Date: 03/15/2014 04:13

Data File: 031414V6\6Z548.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA6.I

Analyst: GRB2

Column: DB-624

Project: ESHL00714

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
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: 2014-2944

Lab Sample ID: 344112009

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAAN-14-54787

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1373110

Inst: VOA6.I

Dilution: 1

Run Date: 03/15/2014 04:13

Analyst: GRB2

Purge Vol: 5 mL

Prep Date: 03/15/2014 04:13

Data File: 031414V6\6Z548.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: 2014-2944

Lab Sample ID: 344112009

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client ID: CAAN-14-54787

Batch ID: 1373110

Run Date: 03/15/2014 04:13

Prep Date: 03/15/2014 04:13

Data File: 031414V6\6Z548.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA6.I

Analyst: GRB2

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	56.5	50.0	ug/L	113	(78%-124%)
Bromofluorobenzene	58.6	50.0	ug/L	117	(80%-120%)
Toluene-d8	51.7	50.0	ug/L	103	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	11.452	7.64	ug/L	0	J
	unknown siloxane	13.848	16.6	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-2944**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203060134	LCS for batch 1373110	102	99	103
1203060135	LCS for batch 1373110	100	96	107
1203060133	MB for batch 1373110	103	99	113
344112004	CAAN-14-54789	113	107	120
344112009	CAAN-14-54787	113	103	117
1203051445	CAWA-14-54738PS	104	98	101
1203051446	CAWA-14-54738PSD	104	98	102
1203051449	CAWA-14-54738PS	110	104	111
1203051450	CAWA-14-54738PSD	112	105	116

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: 2014-2944

Sample Type: Post Spike

Client ID: CAWA-14-54738PS

Matrix: W

Lab Sample ID 1203051445

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:02

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	102	102	72-120
75-05-8	PS Acetonitrile	1250	0.00 U	1420	114	61-135
67-64-1	PS Acetone	250	0.00 U	131	52	29-144
74-88-4	PS Iodomethane	250	0.00 U	260	104	73-120
75-15-0	PS Carbon disulfide	250	0.00 U	244	98	79-138
108-05-4	PS Vinyl acetate	250	0.00 U	188	75	60-136
78-93-3	PS 2-Butanone	250	0.00 U	188	75	38-136
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	254	102	70-132
591-78-6	PS 2-Hexanone	250	0.00 U	199	80	48-137
1634-04-4	PS tert-Butyl methyl ether	50.0	0.620 J	52.2	103	71-124
79-01-6	PS Trichloroethylene	50.0	0.570 J	56.8	112	75-125
127-18-4	PS Tetrachloroethylene	50.0	0.810 J	53.4	105	67-124
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	69.2	138 *	51-133
74-87-3	PS Chloromethane	50.0	0.00 U	63.7	127	54-135
75-01-4	PS Vinyl chloride	50.0	0.00 U	67.3	135 *	52-129
74-83-9	PS Bromomethane	50.0	0.00 U	58.7	117	67-128
75-00-3	PS Chloroethane	50.0	0.00 U	55.9	112	69-120
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	61.1	122	66-126
60-29-7	PS Ethyl ether	50.0	0.00 U	51.0	102	69-120
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	50.2	100	74-130
75-09-2	PS Methylene chloride	50.0	0.00 U	48.7	97	73-120
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	50.8	102	75-124

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2014-2944

Sample Type: Post Spike

Client ID: CAWA-14-54738PS

Matrix: W

Lab Sample ID 1203051445

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:02

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	53.3	107	76-122
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	52.7	105	77-121
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	54.1	108	72-129
74-97-5	PS Bromochloromethane	50.0	0.00 U	53.4	107	78-122
67-66-3	PS Chloroform	50.0	0.00 U	55.6	111	75-123
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	56.6	113	76-129
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	52.0	104	76-125
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	59.6	119	76-132
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	53.2	106	68-128
71-43-2	PS Benzene	50.0	0.00 U	52.1	104	75-120
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	53.1	106	75-120
74-95-3	PS Dibromomethane	50.0	0.00 U	54.5	109	77-122
75-27-4	PS Bromodichloromethane	50.0	0.00 U	57.0	114	76-129
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	52.7	105	75-127
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	52.0	104	73-123
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	52.2	104	77-120
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	51.7	103	73-120
124-48-1	PS Dibromochloromethane	50.0	0.00 U	55.0	110	70-130
108-90-7	PS Chlorobenzene	50.0	0.00 U	50.8	102	74-120
100-41-4	PS Ethylbenzene	50.0	0.00 U	51.5	103	72-120
95-47-6	PS o-Xylene	50.0	0.00 U	51.5	103	72-120
100-42-5	PS Styrene	50.0	0.00 U	50.4	101	74-124

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2014-2944

Sample Type: Post Spike

Client ID: CAWA-14-54738PS

Matrix: W

Lab Sample ID 1203051445

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:02

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
75-25-2	PS Bromoform	50.0	0.00 U	59.5	119	61-135
98-82-8	PS Isopropylbenzene	50.0	0.00 U	52.2	104	71-124
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	53.2	106	74-124
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	53.1	106	71-125
108-86-1	PS Bromobenzene	50.0	0.00 U	49.4	99	72-120
103-65-1	PS n-Propylbenzene	50.0	0.00 U	52.2	104	69-121
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	51.5	103	71-123
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	50.8	102	71-120
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	48.1	96	70-120
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	52.7	105	72-124
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	48.9	98	71-122
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	52.2	104	71-124
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	51.0	102	70-124
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	47.0	94	70-120
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	46.5	93	70-120
104-51-8	PS n-Butylbenzene	50.0	0.00 U	49.8	100	69-125
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	49.1	98	60-129
91-20-3	PS Naphthalene	50.0	0.00 U	47.0	94	58-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	42.8	86	52-132
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	42.4	85	59-126
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	55.7	111	78-128
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	47.6	95	72-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2014-2944

Sample Type: Post Spike

Client ID: CAWA-14-54738PS

Matrix: W

Lab Sample ID 1203051445

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:02

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

CAS No			Parmname		Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
108-88-3	PS		Toluene		50.0	1.67	52.2	101	72-120
71-36-3	PS		n-Butyl alcohol		5000	0.00 U	5860	117	64-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2014-2944

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-54738PSD

Matrix: W

Lab Sample ID 1203051446

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:31

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	102	102	72-120	0 0-20
75-05-8	PSD Acetonitrile	1250	0.00	U	1340	108	61-135	5 0-20
67-64-1	PSD Acetone	250	0.00	U	124	50	29-144	5 0-20
74-88-4	PSD Iodomethane	250	0.00	U	257	103	73-120	1 0-20
75-15-0	PSD Carbon disulfide	250	0.00	U	240	96	79-138	2 0-20
108-05-4	PSD Vinyl acetate	250	0.00	U	184	74	60-136	2 0-20
78-93-3	PSD 2-Butanone	250	0.00	U	178	71	38-136	5 0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00	U	243	97	70-132	4 0-20
591-78-6	PSD 2-Hexanone	250	0.00	U	189	76	48-137	5 0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.620	J	51.2	101	71-124	2 0-20
79-01-6	PSD Trichloroethylene	50.0	0.570	J	56.9	113	75-125	0 0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.810	J	54.0	106	67-124	1 0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00	U	67.1	134 *	51-133	3 0-20
74-87-3	PSD Chloromethane	50.0	0.00	U	61.9	124	54-135	3 0-20
75-01-4	PSD Vinyl chloride	50.0	0.00	U	65.4	131 *	52-129	3 0-20
74-83-9	PSD Bromomethane	50.0	0.00	U	57.8	116	67-128	1 0-20
75-00-3	PSD Chloroethane	50.0	0.00	U	55.8	112	69-120	0 0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00	U	60.6	121	66-126	1 0-20
60-29-7	PSD Ethyl ether	50.0	0.00	U	50.5	101	69-120	1 0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00	U	49.3	99	74-130	2 0-20
75-09-2	PSD Methylene chloride	50.0	0.00	U	47.9	96	73-120	2 0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00	U	50.5	101	75-124	0 0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2014-2944

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-54738PSD

Matrix: W

Lab Sample ID 1203051446

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:31

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	52.7	105	76-122	1	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	52.3	105	77-121	1	0-20
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	55.0	110	72-129	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	53.5	107	78-122	0	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	54.7	109	75-123	2	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	56.8	114	76-129	0	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	52.1	104	76-125	0	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	59.3	119	76-132	0	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	52.7	105	68-128	1	0-20
71-43-2	PSD Benzene	50.0	0.00 U	51.9	104	75-120	0	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	52.9	106	75-120	0	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	53.9	108	77-122	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	56.8	114	76-129	0	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	53.3	107	75-127	1	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	51.8	104	73-123	0	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	50.9	102	77-120	3	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	51.0	102	73-120	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	54.3	109	70-130	1	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	50.7	101	74-120	0	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	51.6	103	72-120	0	0-20
95-47-6	PSD o-Xylene	50.0	0.00 U	51.5	103	72-120	0	0-20
100-42-5	PSD Styrene	50.0	0.00 U	50.9	102	74-124	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2014-2944

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-54738PSD

Matrix: W

Lab Sample ID 1203051446

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:31

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
75-25-2	PSD Bromoform	50.0	0.00	U 59.4	119	61-135	0	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00	U 52.7	105	71-124	1	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00	U 52.6	105	74-124	1	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00	U 52.5	105	71-125	1	0-20
108-86-1	PSD Bromobenzene	50.0	0.00	U 49.9	100	72-120	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00	U 53.0	106	69-121	1	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00	U 51.9	104	71-123	1	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00	U 51.6	103	71-120	2	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00	U 49.3	99	70-120	2	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00	U 53.5	107	72-124	1	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00	U 49.9	100	71-122	2	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00	U 52.8	106	71-124	1	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00	U 51.7	103	70-124	1	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00	U 47.8	96	70-120	2	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00	U 47.5	95	70-120	2	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00	U 51.3	103	69-125	3	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00	U 50.6	101	60-129	3	0-20
91-20-3	PSD Naphthalene	50.0	0.00	U 49.2	98	58-134	5	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00	U 45.1	90	52-132	5	0-20
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00	U 44.6	89	59-126	5	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00	U 55.4	111	78-128	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00	U 48.9	98	72-120	3	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2014-2944

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-54738PSD

Matrix: W

Lab Sample ID 1203051446

Instrument: VOA6.I

Analysis Date: 03/15/2014 07:31

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
108-88-3	PSD Toluene	50.0	1.67	52.1	101	72-120	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	5640	113	64-138	4	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-2944

Sample Type: Post Spike

Client ID: CAWA-14-54738PS

Matrix: W

Lab Sample ID 1203051449

Instrument: VOA6.I

Analysis Date: 03/15/2014 08:00

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	289	116	57-131
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	341	136 *	76-133
107-05-1	PS Allyl chloride	250	0.00 U	292	117	65-130
107-13-1	PS Acrylonitrile	250	0.00 U	322	129 *	70-128
107-12-0	PS Propionitrile	250	0.00 U	332	133 *	68-131
126-98-7	PS Methacrylonitrile	250	0.00 U	307	123	64-129
80-62-6	PS Methyl methacrylate	250	0.00 U	320	128 *	76-120
97-63-2	PS Ethyl methacrylate	250	0.00 U	290	116	72-122
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2990	120	72-134
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	66.5	133	46-140

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-2944

Sample Type: Post Spike Duplicate

Client ID: CAWA-14-54738PSD

Matrix: W

Lab Sample ID 1203051450

Instrument: VOA6.I

Analysis Date: 03/15/2014 08:29

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	304	122	57-131	5	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	341	137 *	76-133	0	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	292	117	65-130	0	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	339	136 *	70-128	5	0-20
107-12-0	PSD Propionitrile	250	0.00 U	351	140 *	68-131	6	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	321	128	64-129	5	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	335	134 *	76-120	5	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	304	121	72-122	4	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	3220	129	72-134	7	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	67.1	134	46-140	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1373110

Matrix: WATER

Lab Sample ID 1203060134

Instrument: VOA6.I

Analysis Date: 03/14/2014 22:55

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	106	106	80-120
75-05-8	LCS Acetonitrile	1250	0.0	1310	105	63-131
67-64-1	LCS Acetone	250	0.0	207	83	50-149
74-88-4	LCS Iodomethane	250	0.0	269	107	75-120
75-15-0	LCS Carbon disulfide	250	0.0	252	101	80-136
108-05-4	LCS Vinyl acetate	250	0.0	173	69 *	78-130
78-93-3	LCS 2-Butanone	250	0.0	222	89	57-148
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	244	97	75-130
591-78-6	LCS 2-Hexanone	250	0.0	207	83	64-149
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	23.3	47 *	58-129
74-87-3	LCS Chloromethane	50.0	0.0	37.8	76	59-131
75-01-4	LCS Vinyl chloride	50.0	0.0	44.2	88	59-127
74-83-9	LCS Bromomethane	50.0	0.0	42.4	85	70-125
75-00-3	LCS Chloroethane	50.0	0.0	43.1	86	73-120
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	48.2	96	73-123
60-29-7	LCS Ethyl ether	50.0	0.0	43.6	87	73-120
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	51.2	102	80-128
75-09-2	LCS Methylene chloride	50.0	0.0	49.3	99	75-120
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	51.6	103	74-122
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	52.1	104	80-121
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	54.0	108	79-120
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	53.2	106	79-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1373110

Matrix: WATER

Lab Sample ID 1203060134

Instrument: VOA6.I

Analysis Date: 03/14/2014 22:55

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	56.0	112	79-130
74-97-5	LCS Bromochloromethane	50.0	0.0	55.0	110	80-121
67-66-3	LCS Chloroform	50.0	0.0	56.1	112	79-120
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	57.4	115	80-128
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	53.7	107	80-123
56-23-5	LCS Carbon tetrachloride	50.0	0.0	60.3	121	80-131
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	52.7	105	73-120
71-43-2	LCS Benzene	50.0	0.0	53.4	107	78-120
79-01-6	LCS Trichloroethylene	50.0	0.0	58.5	117	80-121
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	53.7	107	79-120
74-95-3	LCS Dibromomethane	50.0	0.0	55.1	110	80-120
75-27-4	LCS Bromodichloromethane	50.0	0.0	57.6	115	80-126
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	55.1	110	80-125
108-88-3	LCS Toluene	50.0	0.0	52.3	105	78-120
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	52.2	104	79-121
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	51.9	104	78-120
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	51.5	103	75-120
127-18-4	LCS Tetrachloroethylene	50.0	0.0	56.2	112	74-123
124-48-1	LCS Dibromochloromethane	50.0	0.0	55.0	110	73-129
108-90-7	LCS Chlorobenzene	50.0	0.0	52.9	106	79-120
100-41-4	LCS Ethylbenzene	50.0	0.0	53.3	107	79-120
95-47-6	LCS o-Xylene	50.0	0.0	53.0	106	80-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1373110

Matrix: WATER

Lab Sample ID 1203060134

Instrument: VOA6.I

Analysis Date: 03/14/2014 22:55

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	53.2	106	80-121
75-25-2	LCS Bromoform	50.0	0.0	60.1	120	65-135
98-82-8	LCS Isopropylbenzene	50.0	0.0	54.9	110	79-121
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	52.8	106	76-123
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	52.5	105	76-120
108-86-1	LCS Bromobenzene	50.0	0.0	52.2	104	79-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	55.4	111	80-123
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	54.7	109	80-120
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	54.1	108	79-120
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	51.8	104	79-120
98-06-6	LCS tert-Butylbenzene	50.0	0.0	56.2	112	79-122
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	52.7	105	80-120
135-98-8	LCS sec-Butylbenzene	50.0	0.0	55.3	111	80-121
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	55.1	110	80-121
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	51.0	102	76-120
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	50.4	101	78-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	55.4	111	80-123
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	55.1	110	71-128
91-20-3	LCS Naphthalene	50.0	0.0	52.7	105	64-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	50.0	100	61-132
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	51.0	102	66-130
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	56.5	113	80-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1373110

Matrix: WATER

Lab Sample ID 1203060134

Instrument: VOA6.I

Analysis Date: 03/14/2014 22:55

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	50.9	102	78-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5700	114	67-137

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1373110

Matrix: WATER

Lab Sample ID 1203060135

Instrument: VOA6.I

Analysis Date: 03/15/2014 00:21

Dilution: 1

Analyst: GRB2

Purge Vol: 5 mL

Batch ID: 1373110

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	277	111	65-126
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	322	129	73-132
107-05-1	LCS Allyl chloride	250	0.0	261	105	67-127
107-13-1	LCS Acrylonitrile	250	0.0	297	119	74-122
107-12-0	LCS Propionitrile	250	0.0	305	122	73-124
126-98-7	LCS Methacrylonitrile	250	0.0	280	112	68-123
80-62-6	LCS Methyl methacrylate	250	0.0	301	120	79-120
97-63-2	LCS Ethyl methacrylate	250	0.0	272	109	77-120
78-83-1	LCS Isobutyl alcohol	2500	0.0	2760	110	72-133
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	62.0	124	57-142

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1373110	Instrument ID:	VOA6.I	Data File:	031414V6\6Z541BAR.D
Lab Sample ID:	1203060133	Prep Date:	03/15/2014 00:50	Analyzed:	03/15/14 00:50
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 1373110	1203060134	031414V6\6Z537LAR.D	03/14/14	2255
02 LCS for batch 1373110	1203060135	031414V6\6Z540SHAR.D	03/15/14	0021
03 CAAN-14-54789	344112004	031414V6\6Z547.D	03/15/14	0344
04 CAAN-14-54787	344112009	031414V6\6Z548.D	03/15/14	0413
05 CAWA-14-54738PS	1203051445	031414V6\6Z551.D	03/15/14	0702
06 CAWA-14-54738PSD	1203051446	031414V6\6Z552.D	03/15/14	0731
07 CAWA-14-54738PS	1203051449	031414V6\6Z553.D	03/15/14	0800
08 CAWA-14-54738PSD	1203051450	031414V6\6Z554.D	03/15/14	0829

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051445	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:02	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:02				
Data File:	031414V6\6Z551.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.7	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		56.6	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		53.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		52.2	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		53.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		50.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		52.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		42.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		53.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		42.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		48.9	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		47.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		53.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		53.1	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		51.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		47.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.7	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		46.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		54.1	ug/L	0.300	1.00
78-93-3	2-Butanone		188	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		50.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		199	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		48.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		51.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		254	ug/L	1.50	5.00
67-64-1	Acetone		131	ug/L	3.00	10.0
75-05-8	Acetonitrile		1420	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		52.1	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		57.0	ug/L	0.300	1.00
75-25-2	Bromoform		59.5	ug/L	0.300	1.00
74-83-9	Bromomethane		58.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		244	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051445	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:02	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:02				
Data File:	031414V6\6Z551.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		59.6	ug/L	0.300	1.00
108-90-7	Chlorobenzene		50.8	ug/L	0.300	1.00
75-00-3	Chloroethane		55.9	ug/L	0.300	1.00
67-66-3	Chloroform		55.6	ug/L	0.300	1.00
74-87-3	Chloromethane		63.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		55.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		54.5	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		69.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		51.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		49.1	ug/L	0.300	1.00
74-88-4	Iodomethane		260	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		52.2	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		48.7	ug/L	3.00	10.0
91-20-3	Naphthalene		47.0	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		50.4	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		53.4	ug/L	0.300	1.00
108-88-3	Toluene		52.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		56.8	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		61.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		188	ug/L	1.50	5.00
75-01-4	Vinyl chloride		67.3	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		52.7	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		52.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		102	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5860	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		49.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		52.2	ug/L	0.300	1.00
95-47-6	o-Xylene		51.5	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.2	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		52.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		52.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051445	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:02	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:02				
Data File:	031414V6\6Z551.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		50.8	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		52.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.1	50.0	ug/L 104	(78%-124%)
Bromofluorobenzene	50.7	50.0	ug/L 101	(80%-120%)
Toluene-d8	49.1	50.0	ug/L 98.3	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051446	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:31	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:31				
Data File:	031414V6\6Z552.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		56.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		52.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		50.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		52.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		49.3	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		52.1	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		45.1	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		52.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		44.6	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		49.9	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.9	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.7	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		52.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		51.9	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		47.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		51.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		47.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		55.0	ug/L	0.300	1.00
78-93-3	2-Butanone		178	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		51.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		189	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		49.3	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		51.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		243	ug/L	1.50	5.00
67-64-1	Acetone		124	ug/L	3.00	10.0
75-05-8	Acetonitrile		1340	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		51.9	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		53.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		56.8	ug/L	0.300	1.00
75-25-2	Bromoform		59.4	ug/L	0.300	1.00
74-83-9	Bromomethane		57.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		240	ug/L	1.50	5.00

**Volatile
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Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051446	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:31	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:31				
Data File:	031414V6\6Z552.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		59.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		50.7	ug/L	0.300	1.00
75-00-3	Chloroethane		55.8	ug/L	0.300	1.00
67-66-3	Chloroform		54.7	ug/L	0.300	1.00
74-87-3	Chloromethane		61.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		54.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		53.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		67.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		51.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.6	ug/L	0.300	1.00
74-88-4	Iodomethane		257	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		52.7	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		47.9	ug/L	3.00	10.0
91-20-3	Naphthalene		49.2	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		54.0	ug/L	0.300	1.00
108-88-3	Toluene		52.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		56.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		60.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		184	ug/L	1.50	5.00
75-01-4	Vinyl chloride		65.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		52.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		53.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		102	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		51.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		53.0	ug/L	0.300	1.00
95-47-6	o-Xylene		51.5	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.8	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		51.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		53.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051446	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 07:31	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 07:31				
Data File:	031414V6\6Z552.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		50.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.8	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.1	50.0	104	(78%-124%)
Bromofluorobenzene	51.0	50.0	102	(80%-120%)
Toluene-d8	49.0	50.0	98.0	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-2944	Date Collected: 03/03/2014 11:37	Matrix: W
Lab Sample ID: 1203051449	Date Received: 03/05/2014 09:10	
Client Sample: QC for batch 1373110	Client: ARSL004	Project: QC
Client ID: CAWA-14-54738PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1373110	Inst: VOA6.I	Dilution: 1
Run Date: 03/15/2014 08:00	Analyst: GRB2	Purge Vol: 5 mL
Prep Date: 03/15/2014 08:00		
Data File: 031414V6\6Z553.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		66.5	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		289	ug/L	1.50	5.00
107-13-1	Acrylonitrile		322	ug/L	1.00	5.00
107-05-1	Allyl chloride		292	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:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051449	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 08:00	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 08:00				
Data File:	031414V6\6Z553.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		290	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		2990	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		307	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		320	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		332	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		341	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**

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SDG Number:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051449	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 08:00	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 08:00				
Data File:	031414V6\6Z553.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	55.1	50.0	ug/L 110	(78%-124%)
Bromofluorobenzene	55.4	50.0	ug/L 111	(80%-120%)
Toluene-d8	52.0	50.0	ug/L 104	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-2944	Date Collected: 03/03/2014 11:37	Matrix: W
Lab Sample ID: 1203051450	Date Received: 03/05/2014 09:10	
Client Sample: QC for batch 1373110	Client: ARSL004	Project: QC
Client ID: CAWA-14-54738PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1373110	Inst: VOA6.I	Dilution: 1
Run Date: 03/15/2014 08:29	Analyst: GRB2	Purge Vol: 5 mL
Prep Date: 03/15/2014 08:29		
Data File: 031414V6\6Z554.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		67.1	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		304	ug/L	1.50	5.00
107-13-1	Acrylonitrile		339	ug/L	1.00	5.00
107-05-1	Allyl chloride		292	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: 2014-2944	Date Collected: 03/03/2014 11:37	Matrix: W
Lab Sample ID: 1203051450	Date Received: 03/05/2014 09:10	
Client Sample: QC for batch 1373110	Client: ARSL004	Project: QC
Client ID: CAWA-14-54738PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1373110	Inst: VOA6.I	Dilution: 1
Run Date: 03/15/2014 08:29	Analyst: GRB2	Purge Vol: 5 mL
Prep Date: 03/15/2014 08:29		
Data File: 031414V6\6Z554.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		304	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		3220	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		321	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		335	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		351	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		341	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:	2014-2944	Date Collected:	03/03/2014 11:37	Matrix:	W
Lab Sample ID:	1203051450	Date Received:	03/05/2014 09:10		
Client Sample:	QC for batch 1373110	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54738PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1373110	Inst:	VOA6.I	Dilution:	1
Run Date:	03/15/2014 08:29	Analyst:	GRB2	Purge Vol:	5 mL
Prep Date:	03/15/2014 08:29				
Data File:	031414V6\6Z554.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	55.9	50.0	ug/L	112	(78%-124%)
Bromofluorobenzene	57.8	50.0	ug/L	116	(80%-120%)
Toluene-d8	52.3	50.0	ug/L	105	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-2944		Matrix: WATER
Lab Sample ID: 1203060133		
Client Sample: QC for batch 1373110	Client: ARSL004	Project: QC
Client ID: MB for batch 1373110	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1373110	Inst: VOA6.I	Dilution: 1
Run Date: 03/15/2014 00:50	Analyst: GRB2	Purge Vol: 5 mL
Prep Date: 03/15/2014 00:50		
Data File: 031414V6\6Z541BAR.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: 2014-2944	Matrix: WATER
Lab Sample ID: 1203060133	
Client Sample: QC for batch 1373110	Client: ARSL004
Client ID: MB for batch 1373110	Method: SW846 8260B DOE-AL
Batch ID: 1373110	Project: QC
Run Date: 03/15/2014 00:50	SOP Ref: GL-OA-E-038
Prep Date: 03/15/2014 00:50	Dilution: 1
Data File: 031414V6\6Z541BAR.D	Purge Vol: 5 mL
	Analyst: GRB2
	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:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203060133		
Client Sample:	QC for batch 1373110	Client:	ARSL004
Client ID:	MB for batch 1373110	Method:	SW846 8260B DOE-AL
Batch ID:	1373110	Inst:	VOA6.I
Run Date:	03/15/2014 00:50	Analyst:	GRB2
Prep Date:	03/15/2014 00:50	Purge Vol:	5 mL
Data File:	031414V6\6Z541BAR.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	51.3	50.0	ug/L	103	(78%-124%)
Toluene-d8	49.3	50.0	ug/L	98.6	(80%-120%)
Bromofluorobenzene	56.7	50.0	ug/L	113	(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:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203060134		
Client Sample:	QC for batch 1373110	Client:	ARSL004
Client ID:	LCS for batch 1373110	Method:	SW846 8260B DOE-AL
Batch ID:	1373110	Inst:	VOA6.I
Run Date:	03/14/2014 22:55	Analyst:	GRB2
Prep Date:	03/14/2014 22:55	Purge Vol:	5 mL
Data File:	031414V6\6Z537LAR.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		56.5	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		57.4	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		52.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		51.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		54.0	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		51.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		53.7	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		50.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		52.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		51.0	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.9	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.7	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		53.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		54.7	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.0	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		50.4	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		56.0	ug/L	0.300	1.00
78-93-3	2-Butanone		222	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		54.1	ug/L	0.300	1.00
591-78-6	2-Hexanone		207	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		51.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		55.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		244	ug/L	1.50	5.00
67-64-1	Acetone		207	ug/L	3.00	10.0
75-05-8	Acetonitrile		1310	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		53.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		52.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		55.0	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		57.6	ug/L	0.300	1.00
75-25-2	Bromoform		60.1	ug/L	0.300	1.00
74-83-9	Bromomethane		42.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		252	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203060134		
Client Sample:	QC for batch 1373110	Client:	ARSL004
Client ID:	LCS for batch 1373110	Method:	SW846 8260B DOE-AL
Batch ID:	1373110	Inst:	VOA6.I
Run Date:	03/14/2014 22:55	Analyst:	GRB2
Prep Date:	03/14/2014 22:55	Purge Vol:	5 mL
Data File:	031414V6\6Z537LAR.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		60.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		52.9	ug/L	0.300	1.00
75-00-3	Chloroethane		43.1	ug/L	0.300	1.00
67-66-3	Chloroform		56.1	ug/L	0.300	1.00
74-87-3	Chloromethane		37.8	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		55.0	ug/L	0.300	1.00
74-95-3	Dibromomethane		55.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		23.3	ug/L	0.300	1.00
60-29-7	Ethyl ether		43.6	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		53.3	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		55.1	ug/L	0.300	1.00
74-88-4	Iodomethane		269	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		54.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		49.3	ug/L	3.00	10.0
91-20-3	Naphthalene		52.7	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		53.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		56.2	ug/L	0.300	1.00
108-88-3	Toluene		52.3	ug/L	0.300	1.00
79-01-6	Trichloroethylene		58.5	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		173	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		53.2	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		55.1	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		106	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5700	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		55.4	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		55.4	ug/L	0.300	1.00
95-47-6	o-Xylene		53.0	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		55.3	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		51.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		56.2	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-2944

Lab Sample ID: 1203060134

Client Sample: QC for batch 1373110

Client ID: LCS for batch 1373110

Batch ID: 1373110

Run Date: 03/14/2014 22:55

Prep Date: 03/14/2014 22:55

Data File: 031414V6\6Z537LAR.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA6.I

Analyst: GRB2

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		52.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		52.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.1	50.0	ug/L 102	(78%-124%)
Toluene-d8	49.3	50.0	ug/L 98.5	(80%-120%)
Bromofluorobenzene	51.3	50.0	ug/L 103	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203060135		
Client Sample:	QC for batch 1373110	Client:	ARSL004
Client ID:	LCS for batch 1373110	Method:	SW846 8260B DOE-AL
Batch ID:	1373110	Inst:	VOA6.I
Run Date:	03/15/2014 00:21	Analyst:	GRB2
Prep Date:	03/15/2014 00:21	Purge Vol:	5 mL
Data File:	031414V6\6Z540SHAR.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		62.0	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		277	ug/L	1.50	5.00
107-13-1	Acrylonitrile		297	ug/L	1.00	5.00
107-05-1	Allyl chloride		261	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: 2014-2944	Matrix: WATER
Lab Sample ID: 1203060135	
Client Sample: QC for batch 1373110	Client: ARSL004
Client ID: LCS for batch 1373110	Method: SW846 8260B DOE-AL
Batch ID: 1373110	Project: QC
Run Date: 03/15/2014 00:21	SOP Ref: GL-OA-E-038
Prep Date: 03/15/2014 00:21	Dilution: 1
Data File: 031414V6\6Z540SHAR.D	Purge Vol: 5 mL
	Analyst: GRB2
	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		272	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		2760	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		280	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		301	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		305	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		322	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**

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SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203060135		
Client Sample:	QC for batch 1373110	Client:	ARSL004
Client ID:	LCS for batch 1373110	Method:	SW846 8260B DOE-AL
Batch ID:	1373110	Inst:	VOA6.I
Run Date:	03/15/2014 00:21	Analyst:	GRB2
Prep Date:	03/15/2014 00:21	Purge Vol:	5 mL
Data File:	031414V6\6Z540SHAR.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	49.9	50.0	99.8	(78%-124%)
Toluene-d8	48.2	50.0	96.4	(80%-120%)
Bromofluorobenzene	53.7	50.0	107	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 01-APR-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
Batch ID: 1373110	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 343999(2014-2932),344000(2014-2933),344061(2014-2938),344063(2014-2936),344112(2014-2944),344227(2014-2943)</p> <p>Application Issues:</p> <p>Failed Recovery for MS/PS Failed Recovery for LCS/LCSD Failed Recovery for MSD/PSD</p>			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. The MS and MSD recoveries were not all within the acceptance limits.</p> <p>2. QC samples 1203051447LCS, 1203051448LCS, 1203060131LCS and 1203060134LCS were not all within the acceptance limits.</p>		<p>1. The MS/MSD pairs recovered in similar manners. Please see the Form III's in the deliverable for a complete list of recoveries and acceptance limits. The results are reported.</p> <p>2. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. Please see the Form III's in the deliverable for a complete list of recoveries and acceptance limits. The results are reported.</p>	

Originator's Name:
Erin Haubert 01-APR-14

Data Validator/Group Leader:
Kelle Bellamy 01-APR-14

Semi-Volatile Analysis

Case Narrative

**Semi-Volatile Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2944**

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:	1371072
Prep Batch Number:	1371071

Sample Analysis

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

Sample ID	Client ID
344112004	CAAN-14-54789
1203046757	Method Blank (MB)
1203046758	Laboratory Control Sample (LCS)
1203047900	344000004(CAWA-14-54752) Matrix Spike (MS)
1203047901	344000004(CAWA-14-54752) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference

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

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

Calibration Information

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

Diphenylamine has now superseded N-Nitroso-diphenylamine on Quantitation Reports, Initial Calibration Reports, Calibration Check Standard Reports, etc. Previous versions of EPA Methodologies referenced N-Nitroso-diphenylamine. However, as stated in EPA Methodology, "N-Nitroso-diphenylamine decomposes in the gas chromatographic inlet and cannot be separated from Diphenylamine." Studies of these two compounds at

GEL, both independent of each other and together, showed that they not only co-elute, but also have similar mass spectra. N-Nitroso-diphenylamine and Diphenylamine will be reported as Diphenylamine on all reports and forms.

Initial Calibration

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

CCV Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The 1203046758 (LCS) recovered p-Nitroaniline at 134% and the limits are 38%-133%). Because this analyte was biased high and target analytes were not detected in the associated samples, the data are reported.

QC Sample Designation

Sample 344000004 (CAWA-14-54752) was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS, 1203047900 (CAWA-14-54752), displayed high spike recovery failures. Please see the QC Summary/Spike Recovery Report for specific failures. Because these analytes were biased high and target analytes were not detected in the associated samples, the data are reported.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD, 1203047901 (CAWA-14-54752), recovered p-Nitroaniline at 135% and the limits are 25%-133%). Because this analyte was biased high and target analytes were not detected in the associated samples, the data are reported.

MS/MSD Relative Percent Difference (RPD) Statement

The MS and MSD, 1203047900 (CAWA-14-54752) and 1203047901 (CAWA-14-54752), pair did not meet RPD value acceptance criteria for requested spike analytes. As the individual MS and MSD recoveries passed for the analytes associated with the RPD value failures, the failures had no adverse impact on the reported sample data.

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

Sample 1203047900 (CAWA-14-54752) was re-analyzed due to high spike recoveries. The re-analysis confirmed the high spike recoveries. The original data are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception report 1273696 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 1203046757 (MB) and 344112004 (CAAN-14-54789) 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
MSD3.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP7890A/HP5975C	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112

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: 27 MAR 2014

Title: Data Validator

Sample Data Summary

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

SDG Number: 2014-2944

Lab Sample ID: 344112004

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1371072

Inst: MSD3.I

Dilution: 1

Run Date: 03/11/2014 14:37

Analyst: JLD1

Inj. Vol: 1 uL

Prep Date: 03/10/2014 11:35

Aliquot: 920 mL

Final Volume: 1 mL

Data File: s031114.B\s3c1114.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.9	ug/L	3.26	10.9
120-82-1	1,2,4-Trichlorobenzene	U	10.9	ug/L	3.26	10.9
95-50-1	1,2-Dichlorobenzene	U	10.9	ug/L	3.26	10.9
122-66-7	Azobenzene	U	10.9	ug/L	3.26	10.9
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.9	ug/L	3.26	10.9
106-46-7	1,4-Dichlorobenzene	U	10.9	ug/L	3.26	10.9
123-91-1	1,4-Dioxane	U	10.9	ug/L	3.26	10.9
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.9	ug/L	3.26	10.9
95-95-4	2,4,5-Trichlorophenol	U	10.9	ug/L	3.26	10.9
88-06-2	2,4,6-Trichlorophenol	U	10.9	ug/L	3.26	10.9
120-83-2	2,4-Dichlorophenol	U	10.9	ug/L	3.26	10.9
105-67-9	2,4-Dimethylphenol	U	10.9	ug/L	3.26	10.9
51-28-5	2,4-Dinitrophenol	U	21.7	ug/L	5.43	21.7
121-14-2	2,4-Dinitrotoluene	U	10.9	ug/L	3.26	10.9
606-20-2	2,6-Dinitrotoluene	U	10.9	ug/L	3.26	10.9
91-58-7	2-Chloronaphthalene	U	1.09	ug/L	0.446	1.09
95-57-8	2-Chlorophenol	U	10.9	ug/L	3.26	10.9
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.9	ug/L	3.26	10.9
88-75-5	2-Nitrophenol	U	10.9	ug/L	3.26	10.9
91-94-1	3,3'-Dichlorobenzidine	U	10.9	ug/L	3.26	10.9
101-55-3	4-Bromophenylphenylether	U	10.9	ug/L	3.26	10.9
59-50-7	Parachlorometa cresol	U	10.9	ug/L	3.26	10.9
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.9	ug/L	3.59	10.9
7005-72-3	4-Chlorophenylphenylether	U	10.9	ug/L	3.26	10.9
100-02-7	4-Nitrophenol	U	10.9	ug/L	3.26	10.9
62-53-3	Aniline	U	10.9	ug/L	4.57	10.9
1912-24-9	Atrazine	U	10.9	ug/L	3.26	10.9
92-87-5	Benzidine	U	10.9	ug/L	4.24	10.9
65-85-0	Benzoic acid	U	21.7	ug/L	6.52	21.7
100-51-6	Benzyl alcohol	U	10.9	ug/L	3.26	10.9
85-68-7	Butylbenzylphthalate	U	10.9	ug/L	3.26	10.9
84-74-2	Di-n-butylphthalate	U	10.9	ug/L	3.26	10.9
117-84-0	Di-n-octylphthalate	U	10.9	ug/L	3.26	10.9
132-64-9	Dibenzofuran	U	10.9	ug/L	3.26	10.9
84-66-2	Diethylphthalate	U	10.9	ug/L	3.26	10.9
131-11-3	Dimethylphthalate	U	10.9	ug/L	3.26	10.9
88-85-7	Dinoseb	U	10.9	ug/L	3.26	10.9

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

Page 2 of 3

SDG Number: 2014-2944

Lab Sample ID: 344112004

Date Collected: 03/05/2014 11:32

Date Received: 03/07/2014 09:10

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD3.I

Dilution: 1

Batch ID: 1371072

Analyst: JLD1

Inj. Vol: 1 uL

Run Date: 03/11/2014 14:37

Aliquot: 920 mL

Final Volume: 1 mL

Prep Date: 03/10/2014 11:35

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine	U	10.9	ug/L	3.26	10.9
87-68-3	Hexachlorobutadiene	U	10.9	ug/L	3.26	10.9
77-47-4	Hexachlorocyclopentadiene	U	10.9	ug/L	3.26	10.9
67-72-1	Hexachloroethane	U	10.9	ug/L	3.26	10.9
78-59-1	Isophorone	U	10.9	ug/L	3.80	10.9
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.9	ug/L	3.26	10.9
924-16-3	N-Nitrosodi-n-butylamine	U	10.9	ug/L	3.26	10.9
55-18-5	N-Nitrosodiethylamine	U	10.9	ug/L	3.26	10.9
621-64-7	N-Nitrosodi--n-propylamine	U	10.9	ug/L	3.26	10.9
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.9	ug/L	3.26	10.9
98-95-3	Nitrobenzene	U	10.9	ug/L	3.26	10.9
608-93-5	Pentachlorobenzene	U	10.9	ug/L	3.26	10.9
108-95-2	Phenol	U	10.9	ug/L	3.26	10.9
110-86-1	Pyridine	U	10.9	ug/L	3.26	10.9
111-91-1	bis(2-Chloroethoxy)methane	U	10.9	ug/L	3.26	10.9
111-44-4	bis(2-Chloroethyl) ether	U	10.9	ug/L	3.26	10.9
39638-32-9	bis(2-Chloroisopropyl)ether	U	10.9	ug/L	3.26	10.9
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.9	ug/L	3.26	10.9
65794-96-9	m,p-Cresols	U	10.9	ug/L	4.02	10.9
99-09-2	3-Nitroaniline	U	10.9	ug/L	3.26	10.9
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.9	ug/L	3.26	10.9
88-74-4	2-Nitroaniline	U	10.9	ug/L	3.26	10.9
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.9	ug/L	3.26	10.9
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	96.3	109	ug/L	88.6 (26%-129%)
2-Fluorobiphenyl	34.9	54.3	ug/L	64.2 (32%-102%)
2-Fluorophenol	46.8	109	ug/L	43.0 (10%-78%)
Nitrobenzene-d5	35.8	54.3	ug/L	65.9 (36%-125%)
Phenol-d5	30.6	109	ug/L	28.2 (10%-104%)
p-Terphenyl-d14	41.7	54.3	ug/L	76.7 (34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000067-66-3	Trichloromethane	1.862	37.7	ug/L	97	NJ
	unknown	2.079	54	ug/L	0	J

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

Page 3 of 3

SDG Number: 2014-2944
Lab Sample ID: 344112004

Client ID: CAAN-14-54789
Batch ID: 1371072
Run Date: 03/11/2014 14:37
Prep Date: 03/10/2014 11:35
Data File: s031114.B\s3c1114.D

Date Collected: 03/05/2014 11:32
Date Received: 03/07/2014 09:10
Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 920 mL
Column: DB-5ms

Matrix: W

Project: ESHL00714
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
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Tentatively Identified Compound Summary						
CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	2.126	4.91	ug/L	0	J
	unknown	2.196	119	ug/L	0	J
	unknown	2.237	10.4	ug/L	0	J
	unknown	3.274	5.47	ug/L	0	J
	unknown	3.681	5.68	ug/L	0	J

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-2944**Matrix Type: LIQUID**

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203046757	MB for batch 1371071	46	30	72	59	82	113
1203046758	LCS for batch 1371071	44	29	68	52	108	79
1203047900	CAWA-14-54752MS	75	59	90	88	123	102
1203047901	CAWA-14-54752MSD	53	44	70	63	105	79
344112004	CAAN-14-54789	43	28	66	64	89	77

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 3

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1371071

Matrix: WATER

Lab Sample ID 1203046758

Instrument: MSD3.I

Analysis Date: 03/11/2014 10:45

Dilution: 1

Analyst: JLD1

Prep Batch ID:1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	23.8	48	18-75
110-86-1	LCS Pyridine	50.0	0.0	27.5	55	11-88
62-53-3	LCS Aniline	50.0	0.0	41.1	82	35-107
108-95-2	LCS Phenol	50.0	0.0	15.0	30	13-77
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	38.6	77	35-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	35.9	72	39-99
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	21.8	44	25-100
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	22.2	44	24-88
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	23.4	47	27-87
39638-32-9	LCS bis(2-Chloroisopropyl)ether	50.0	0.0	28.8	58	23-120
100-51-6	LCS Benzyl alcohol	50.0	0.0	35.8	72	33-90
95-48-7	LCS o-Cresol	50.0	0.0	33.6	67	32-90
65794-96-9	LCS m,p-Cresols	50.0	0.0	35.3	71	28-100
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	41.1	82	39-113
67-72-1	LCS Hexachloroethane	50.0	0.0	19.6	39	20-85
98-95-3	LCS Nitrobenzene	50.0	0.0	35.7	71	41-119
78-59-1	LCS Isophorone	50.0	0.0	42.9	86	49-133
88-75-5	LCS 2-Nitrophenol	50.0	0.0	38.0	76	42-111
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	36.4	73	43-99
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	41.0	82	44-109
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	38.9	78	45-106
65-85-0	LCS Benzoic acid	100	0.0	37.4	37	10-81

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 3

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1371071

Matrix: WATER

Lab Sample ID 1203046758

Instrument: MSD3.I

Analysis Date: 03/11/2014 10:45

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	43.9	88	50-122
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	20.5	41	19-92
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	42.1	84	46-111
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	18.4	37	15-72
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	42.6	85	41-109
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	42.5	85	41-111
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	32.3	65	36-98
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	41.8	84	44-117
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	49.8	100	45-124
131-11-3	LCS Dimethylphthalate	50.0	0.0	45.7	91	53-112
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	45.4	91	52-117
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	49.3	99	45-124
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	51.0	102	19-110
132-64-9	LCS Dibenzofuran	50.0	0.0	40.7	81	45-107
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	45.2	90	45-120
84-66-2	LCS Diethylphthalate	50.0	0.0	46.4	93	51-116
100-02-7	LCS 4-Nitrophenol	50.0	0.0	21.3	43	16-77
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	42.0	84	40-114
100-01-6	LCS 4-Nitroaniline p-Nitroaniline	50.0	0.0	67.1	134 *	38-133
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	44.3	89	34-114
122-39-4	LCS Diphenylamine	50.0	0.0	40.8	82	47-111
122-66-7	LCS Azobenzene 1,2-Diphenylhydrazine	50.0	0.0	33.7	67	40-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 3

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1371071

Matrix: WATER

Lab Sample ID 1203046758

Instrument: MSD3.I

Analysis Date: 03/11/2014 10:45

Dilution: 1

Analyst: JLD1

Prep Batch ID:1371071

Inj. Vol: 1 uL

Batch ID: 1371072

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	39.1	78	41-113
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	43.9	88	49-116
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	38.7	77	40-122
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	39.4	79	37-124
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	41.6	83	33-122
123-91-1	LCS 1,4-Dioxane	50.0	0.0	22.3	45	26-73
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	39.4	79	42-106
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	28.2	56	36-95
1912-24-9	LCS Atrazine	50.0	0.0	47.9	96	47-115
92-87-5	LCS Benzidine	100	0.0	67.0	67	10-124
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	42.7	85	31-113
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	24.6	49	26-92

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAWA-14-54752MS

Matrix: W

Lab Sample ID 1203047900

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:12

Dilution: 1

Analyst: JLD1

Prep Batch ID:1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS N-Methyl-N-nitrosomethylam	100	0.00 U	82.6	83	21-88
110-86-1	MS Pyridine	100	0.00 U	84.6	85	14-94
62-53-3	MS Aniline	100	0.00 U	110	110 *	24-109
108-95-2	MS Phenol	100	0.00 U	60.7	61	10-88
111-44-4	MS bis(2-Chloroethyl) ether	100	0.00 U	102	102	25-114
95-57-8	MS 2-Chlorophenol	100	0.00 U	94.9	95	31-103
541-73-1	MS 1,3-Dichlorobenzene	100	0.00 U	62.5	62	18-83
106-46-7	MS 1,4-Dichlorobenzene	100	0.00 U	63.3	63	20-86
95-50-1	MS 1,2-Dichlorobenzene	100	0.00 U	67.1	67	21-85
39638-32-9	MS bis(2-Chloroisopropyl)ether	100	0.00 U	78.2	78	16-121
100-51-6	MS Benzyl alcohol	100	0.00 U	101	101 *	31-100
95-48-7	MS o-Cresol	100	0.00 U	94.5	95	26-97
65794-96-9	MS m,p-Cresols	100	0.00 U	104	104	24-110
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	100	0.00 U	103	103	29-116
67-72-1	MS Hexachloroethane	100	0.00 U	57.2	57	17-82
98-95-3	MS Nitrobenzene	100	0.00 U	94.5	94	32-126
78-59-1	MS Isophorone	100	0.00 U	107	107	36-139
88-75-5	MS 2-Nitrophenol	100	0.00 U	99.0	99	29-117
105-67-9	MS 2,4-Dimethylphenol	100	0.00 U	93.2	93	28-107
111-91-1	MS bis(2-Chloroethoxy)methane	100	0.00 U	104	104	34-112
120-83-2	MS 2,4-Dichlorophenol	100	0.00 U	98.4	98	34-111
65-85-0	MS Benzoic acid	200	0.00 U	133	67	10-105

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAWA-14-54752MS

Matrix: W

Lab Sample ID 1203047900

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:12

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	100	0.00	U	109	109	28-123
87-68-3	MS	Hexachlorobutadiene	100	0.00	U	64.0	64	11-97
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	100	0.00	U	103	103	31-119
77-47-4	MS	Hexachlorocyclopentadiene	100	0.00	U	58.5	58	14-73
88-06-2	MS	2,4,6-Trichlorophenol	100	0.00	U	111	111	31-113
95-95-4	MS	2,4,5-Trichlorophenol	100	0.00	U	109	109	30-117
91-58-7	MS	2-Chloronaphthalene	100	0.00	U	92.6	93	30-97
88-74-4	MS	2-Nitroaniline o-Nitroaniline	100	0.00	U	101	101	28-122
99-09-2	MS	3-Nitroaniline m-Nitroaniline	100	0.00	U	110	110	29-125
131-11-3	MS	Dimethylphthalate	100	0.00	U	111	111	41-116
606-20-2	MS	2,6-Dinitrotoluene	100	0.00	U	111	111	40-123
121-14-2	MS	2,4-Dinitrotoluene	100	0.00	U	116	116	34-126
51-28-5	MS	2,4-Dinitrophenol	100	0.00	U	113	113 *	17-110
132-64-9	MS	Dibenzofuran	100	0.00	U	108	108 *	36-107
58-90-2	MS	2,3,4,6-Tetrachlorophenol	100	0.00	U	110	110	29-126
84-66-2	MS	Diethylphthalate	100	0.00	U	110	110	41-117
100-02-7	MS	4-Nitrophenol	100	0.00	U	61.7	62	16-71
7005-72-3	MS	4-Chlorophenylphenylether	100	0.00	U	110	110	30-112
100-01-6	MS	4-Nitroaniline p-Nitroaniline	100	0.00	U	141	141 *	25-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	100	0.00	U	105	105	22-118
122-39-4	MS	Diphenylamine	100	0.00	U	110	110	34-111
122-66-7	MS	Azobenzene 1,2-Diphenylhydrazine	100	0.00	U	94.9	95	30-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAWA-14-54752MS

Matrix: W

Lab Sample ID 1203047900

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:12

Dilution: 1

Analyst: JLD1

Prep Batch ID:1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
101-55-3	MS 4-Bromophenylphenylether	100	0.00 U	112	112 *	32-111
84-74-2	MS Di-n-butylphthalate	100	0.00 U	115	115	35-118
85-68-7	MS Butylbenzylphthalate	100	0.00 U	104	104	29-121
117-81-7	MS bis(2-Ethylhexyl)phthalate	100	0.00 U	101	101	29-120
117-84-0	MS Di-n-octylphthalate	100	0.00 U	101	101	25-118
123-91-1	MS 1,4-Dioxane	100	0.00 U	78.5	79	26-88
930-55-2	MS N-Nitrosopyrrolidine	100	0.00 U	101	101	42-110
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	100	0.00 U	84.7	85	29-96
1912-24-9	MS Atrazine	100	0.00 U	118	118	33-121
92-87-5	MS Benzidine	200	0.00 U	120	60	10-117
91-94-1	MS 3,3'-Dichlorobenzidine	100	0.00 U	104	104	22-111
120-82-1	MS 1,2,4-Trichlorobenzene	100	0.00 U	73.4	73	20-90

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-14-54752MSD

Matrix: W

Lab Sample ID 1203047901

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:41

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits	
62-75-9	MSD N-Methyl-N-nitrosomethylam	100	0.00	U	61.1	61	21-88	30	0-30
110-86-1	MSD Pyridine	100	0.00	U	77.6	78	14-94	9	0-30
62-53-3	MSD Aniline	100	0.00	U	87.0	87	24-109	23	0-30
108-95-2	MSD Phenol	100	0.00	U	46.5	46	10-88	27	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	100	0.00	U	70.2	70	25-114	37 *	0-30
95-57-8	MSD 2-Chlorophenol	100	0.00	U	70.7	71	31-103	29	0-30
541-73-1	MSD 1,3-Dichlorobenzene	100	0.00	U	44.8	45	18-83	33 *	0-30
106-46-7	MSD 1,4-Dichlorobenzene	100	0.00	U	43.3	43	20-86	38 *	0-30
95-50-1	MSD 1,2-Dichlorobenzene	100	0.00	U	48.0	48	21-85	33 *	0-30
39638-32-9	MSD bis(2-Chloroisopropyl)ether	100	0.00	U	55.9	56	16-121	33 *	0-30
100-51-6	MSD Benzyl alcohol	100	0.00	U	78.3	78	31-100	25	0-30
95-48-7	MSD o-Cresol	100	0.00	U	72.4	72	26-97	26	0-30
65794-96-9	MSD m,p-Cresols	100	0.00	U	78.4	78	24-110	28	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	100	0.00	U	80.0	80	29-116	26	0-30
67-72-1	MSD Hexachloroethane	100	0.00	U	42.3	42	17-82	30	0-30
98-95-3	MSD Nitrobenzene	100	0.00	U	74.4	74	32-126	24	0-30
78-59-1	MSD Isophorone	100	0.00	U	86.2	86	36-139	21	0-30
88-75-5	MSD 2-Nitrophenol	100	0.00	U	80.1	80	29-117	21	0-30
105-67-9	MSD 2,4-Dimethylphenol	100	0.00	U	74.5	75	28-107	22	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	100	0.00	U	86.5	87	34-112	18	0-30
120-83-2	MSD 2,4-Dichlorophenol	100	0.00	U	81.8	82	34-111	18	0-30
65-85-0	MSD Benzoic acid	200	0.00	U	125	62	10-105	6	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-14-54752MSD

Matrix: W

Lab Sample ID 1203047901

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:41

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	100	0.00 U	88.2	88	28-123	21	0-30
87-68-3	MSD Hexachlorobutadiene	100	0.00 U	49.0	49	11-97	27	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	100	0.00 U	89.8	90	31-119	14	0-30
77-47-4	MSD Hexachlorocyclopentadiene	100	0.00 U	42.4	42	14-73	32 *	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	100	0.00 U	85.7	86	31-113	25	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	100	0.00 U	83.8	84	30-117	26	0-30
91-58-7	MSD 2-Chloronaphthalene	100	0.00 U	69.8	70	30-97	28	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	100	0.00 U	82.9	83	28-122	19	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	100	0.00 U	97.5	97	29-125	12	0-30
131-11-3	MSD Dimethylphthalate	100	0.00 U	84.6	85	41-116	27	0-30
606-20-2	MSD 2,6-Dinitrotoluene	100	0.00 U	88.3	88	40-123	23	0-30
121-14-2	MSD 2,4-Dinitrotoluene	100	0.00 U	93.0	93	34-126	22	0-30
51-28-5	MSD 2,4-Dinitrophenol	100	0.00 U	97.0	97	17-110	16	0-30
132-64-9	MSD Dibenzofuran	100	0.00 U	85.4	85	36-107	23	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	100	0.00 U	93.8	94	29-126	16	0-30
84-66-2	MSD Diethylphthalate	100	0.00 U	94.3	94	41-117	16	0-30
100-02-7	MSD 4-Nitrophenol	100	0.00 U	69.9	70	16-71	13	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	100	0.00 U	91.0	91	30-112	19	0-30
100-01-6	MSD 4-Nitroaniline p-Nitroaniline	100	0.00 U	135	135 *	25-133	4	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	100	0.00 U	90.5	90	22-118	15	0-30
122-39-4	MSD Diphenylamine	100	0.00 U	86.8	87	34-111	24	0-30
122-66-7	MSD Azobenzene 1,2-Diphenylhydrazine	100	0.00 U	75.3	75	30-112	23	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 6

SDG Number: 2014-2944

Sample Type: Matrix Spike Duplicate

Client ID: CAWA-14-54752MSD

Matrix: W

Lab Sample ID 1203047901

Instrument: MSD3.I

Analysis Date: 03/11/2014 12:41

Dilution: 1

Analyst: JLD1

Prep Batch ID: 1371071

Inj. Vol: 1 uL

Batch ID: 1371072

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
101-55-3	MSD 4-Bromophenylphenylether	100	0.00 U	84.4	84	32-111	28	0-30
84-74-2	MSD Di-n-butylphthalate	100	0.00 U	76.1	76	35-118	41 *	0-30
85-68-7	MSD Butylbenzylphthalate	100	0.00 U	82.2	82	29-121	23	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	100	0.00 U	82.1	82	29-120	21	0-30
117-84-0	MSD Di-n-octylphthalate	100	0.00 U	76.6	77	25-118	28	0-30
123-91-1	MSD 1,4-Dioxane	100	0.00 U	57.4	57	26-88	31 *	0-30
930-55-2	MSD N-Nitrosopyrrolidine	100	0.00 U	80.7	81	42-110	23	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	100	0.00 U	60.5	61	29-96	33 *	0-30
1912-24-9	MSD Atrazine	100	0.00 U	91.6	92	33-121	25	0-30
92-87-5	MSD Benzidine	200	0.00 U	137	68	10-117	13	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	100	0.00 U	80.5	80	22-111	25	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	100	0.00 U	52.1	52	20-90	34 *	0-30

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1371071	Instrument ID:	MSD3.I	Data File:	s031114.B\s3c1105.D
Lab Sample ID:	1203046757	Prep Date:	03/10/2014 11:35	Analyzed:	03/11/14 10:16
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 1371071	1203046758	s031114.B\s3c1106.D	03/11/14	1045
02 CAWA-14-54752MS	1203047900	s031114.B\s3c1109.D	03/11/14	1212
03 CAWA-14-54752MSD	1203047901	s031114.B\s3c1110.D	03/11/14	1241
04 CAAN-14-54789	344112004	s031114.B\s3c1114.D	03/11/14	1437

Quality Control Data

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

SDG Number: 2014-2944

Lab Sample ID: 1203046757

Client Sample: QC for batch 1371071

Client ID: MB for batch 1371071

Batch ID: 1371072

Run Date: 03/11/2014 10:16

Prep Date: 03/10/2014 11:35

Data File: s031114.B\s3c1105.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD3.I

Analyst: JLD1

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
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 3

SDG Number: 2014-2944

Lab Sample ID: 1203046757

Client Sample: QC for batch 1371071

Client ID: MB for batch 1371071

Batch ID: 1371072

Run Date: 03/11/2014 10:16

Prep Date: 03/10/2014 11:35

Data File: s031114.B\s3c1105.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
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
39638-32-9	bis(2-Chloroisopropyl)ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	81.6	100	ug/L	81.6	(26%-129%)
2-Fluorobiphenyl	29.3	50.0	ug/L	58.5	(32%-102%)
2-Fluorophenol	46.2	100	ug/L	46.2	(10%-78%)
Nitrobenzene-d5	36.2	50.0	ug/L	72.3	(36%-125%)
Phenol-d5	30.1	100	ug/L	30.1	(10%-104%)
p-Terphenyl-d14	56.7	50.0	ug/L	113	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000067-66-3	Trichloromethane	1.862	41.5	ug/L	97	NJ
	unknown	2.076	57	ug/L	0	J

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

Page 3 of 3

SDG Number: 2014-2944

Lab Sample ID: 1203046757

Client Sample: QC for batch 1371071

Client ID: MB for batch 1371071

Batch ID: 1371072

Run Date: 03/11/2014 10:16

Prep Date: 03/10/2014 11:35

Data File: s031114.B\s3c1105.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
Tentatively Identified Compound Summary						
CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
001569-50-2	unknown	2.123	4.97	ug/L	0	J
	unknown	2.193	122	ug/L	0	J
	3-Penten-2-ol	2.234	9.75	ug/L	87	NJ
	unknown	3.271	6.01	ug/L	0	J
	unknown	3.679	6.37	ug/L	0	J

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

SDG Number: 2014-2944

Lab Sample ID: 1203046758

Client Sample: QC for batch 1371071

Client ID: LCS for batch 1371071

Batch ID: 1371072

Run Date: 03/11/2014 10:45

Prep Date: 03/10/2014 11:35

Data File: s031114.B\s3c1106.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD3.I

Analyst: JLD1

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		28.2	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		24.6	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		23.4	ug/L	3.00	10.0
122-66-7	Azobenzene		33.7	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		21.8	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		22.2	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		22.3	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol		45.2	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		42.5	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		42.6	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		38.9	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		36.4	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		51.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		49.3	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		45.4	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		32.3	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		35.9	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		44.3	ug/L	3.00	10.0
88-75-5	2-Nitrophenol		38.0	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		42.7	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		39.1	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		42.1	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		43.9	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		42.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		21.3	ug/L	3.00	10.0
62-53-3	Aniline		41.1	ug/L	4.20	10.0
1912-24-9	Atrazine		47.9	ug/L	3.00	10.0
92-87-5	Benzidine		67.0	ug/L	3.90	10.0
65-85-0	Benzoic acid		37.4	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		35.8	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		38.7	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate		43.9	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		41.6	ug/L	3.00	10.0
132-64-9	Dibenzofuran		40.7	ug/L	3.00	10.0
84-66-2	Diethylphthalate		46.4	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		45.7	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0

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

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SDG Number: 2014-2944

Lab Sample ID: 1203046758

Client Sample: QC for batch 1371071

Client ID: LCS for batch 1371071

Batch ID: 1371072

Run Date: 03/11/2014 10:45

Prep Date: 03/10/2014 11:35

Data File: s031114.B\s3c1106.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		40.8	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		20.5	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		18.4	ug/L	3.00	10.0
67-72-1	Hexachloroethane		19.6	ug/L	3.00	10.0
78-59-1	Isophorone		42.9	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		41.1	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		39.4	ug/L	3.00	10.0
98-95-3	Nitrobenzene		35.7	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol		15.0	ug/L	3.00	10.0
110-86-1	Pyridine		27.5	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		41.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		38.6	ug/L	3.00	10.0
39638-32-9	bis(2-Chloroisopropyl)ether		28.8	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		39.4	ug/L	3.00	10.0
65794-96-9	m,p-Cresols		35.3	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		49.8	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		33.6	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		41.8	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		67.1	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	108	100	ug/L	108	(26%-129%)
2-Fluorobiphenyl	26.2	50.0	ug/L	52.4	(32%-102%)
2-Fluorophenol	43.6	100	ug/L	43.6	(10%-78%)
Nitrobenzene-d5	34.1	50.0	ug/L	68.2	(36%-125%)
Phenol-d5	29.4	100	ug/L	29.4	(10%-104%)
p-Terphenyl-d14	39.7	50.0	ug/L	79.4	(34%-135%)

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

SDG Number: 2014-2944
Lab Sample ID: 1203047900
Client Sample: QC for batch 1371071
Client ID: CAWA-14-54752MS
Batch ID: 1371072
Run Date: 03/11/2014 12:12
Prep Date: 03/10/2014 11:35
Data File: s031114.B\s3c1109.D

Date Collected: 03/03/2014 12:08
Date Received: 03/05/2014 09:10
Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 500 mL
Column: DB-5ms

Matrix: W
Project: QC
SOP Ref: GL-OA-E-009
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		84.7	ug/L	6.00	20.0
120-82-1	1,2,4-Trichlorobenzene		73.4	ug/L	6.00	20.0
95-50-1	1,2-Dichlorobenzene		67.1	ug/L	6.00	20.0
122-66-7	Azobenzene		94.9	ug/L	6.00	20.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		62.5	ug/L	6.00	20.0
106-46-7	1,4-Dichlorobenzene		63.3	ug/L	6.00	20.0
123-91-1	1,4-Dioxane		78.5	ug/L	6.00	20.0
58-90-2	2,3,4,6-Tetrachlorophenol		110	ug/L	6.00	20.0
95-95-4	2,4,5-Trichlorophenol		109	ug/L	6.00	20.0
88-06-2	2,4,6-Trichlorophenol		111	ug/L	6.00	20.0
120-83-2	2,4-Dichlorophenol		98.4	ug/L	6.00	20.0
105-67-9	2,4-Dimethylphenol		93.2	ug/L	6.00	20.0
51-28-5	2,4-Dinitrophenol		113	ug/L	10.0	40.0
121-14-2	2,4-Dinitrotoluene		116	ug/L	6.00	20.0
606-20-2	2,6-Dinitrotoluene		111	ug/L	6.00	20.0
91-58-7	2-Chloronaphthalene		92.6	ug/L	0.820	2.00
95-57-8	2-Chlorophenol		94.9	ug/L	6.00	20.0
534-52-1	2-Methyl-4,6-dinitrophenol		105	ug/L	6.00	20.0
88-75-5	2-Nitrophenol		99.0	ug/L	6.00	20.0
91-94-1	3,3'-Dichlorobenzidine		104	ug/L	6.00	20.0
101-55-3	4-Bromophenylphenylether		112	ug/L	6.00	20.0
59-50-7	Parachlorometa cresol		103	ug/L	6.00	20.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		109	ug/L	6.60	20.0
7005-72-3	4-Chlorophenylphenylether		110	ug/L	6.00	20.0
100-02-7	4-Nitrophenol		61.7	ug/L	6.00	20.0
62-53-3	Aniline		110	ug/L	8.40	20.0
1912-24-9	Atrazine		118	ug/L	6.00	20.0
92-87-5	Benzidine		120	ug/L	7.80	20.0
65-85-0	Benzoic acid		133	ug/L	12.0	40.0
100-51-6	Benzyl alcohol		101	ug/L	6.00	20.0
85-68-7	Butylbenzylphthalate		104	ug/L	6.00	20.0
84-74-2	Di-n-butylphthalate		115	ug/L	6.00	20.0
117-84-0	Di-n-octylphthalate		101	ug/L	6.00	20.0
132-64-9	Dibenzofuran		108	ug/L	6.00	20.0
84-66-2	Diethylphthalate		110	ug/L	6.00	20.0
131-11-3	Dimethylphthalate		111	ug/L	6.00	20.0
88-85-7	Dinoseb	U	20.0	ug/L	6.00	20.0

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

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SDG Number: 2014-2944
Lab Sample ID: 1203047900
Client Sample: QC for batch 1371071
Client ID: CAWA-14-54752MS
Batch ID: 1371072
Run Date: 03/11/2014 12:12
Prep Date: 03/10/2014 11:35
Data File: s031114.B\s3c1109.D

Date Collected: 03/03/2014 12:08
Date Received: 03/05/2014 09:10
Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 500 mL
Column: DB-5ms

Matrix: W
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		110	ug/L	6.00	20.0
87-68-3	Hexachlorobutadiene		64.0	ug/L	6.00	20.0
77-47-4	Hexachlorocyclopentadiene		58.5	ug/L	6.00	20.0
67-72-1	Hexachloroethane		57.2	ug/L	6.00	20.0
78-59-1	Isophorone		107	ug/L	7.00	20.0
62-75-9	N-Methyl-N-nitrosomethylamine		82.6	ug/L	6.00	20.0
924-16-3	N-Nitrosodi-n-butylamine	U	20.0	ug/L	6.00	20.0
55-18-5	N-Nitrosodiethylamine	U	20.0	ug/L	6.00	20.0
621-64-7	N-Nitrosodi--n-propylamine		103	ug/L	6.00	20.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		101	ug/L	6.00	20.0
98-95-3	Nitrobenzene		94.5	ug/L	6.00	20.0
608-93-5	Pentachlorobenzene	U	20.0	ug/L	6.00	20.0
108-95-2	Phenol		60.7	ug/L	6.00	20.0
110-86-1	Pyridine		84.6	ug/L	6.00	20.0
111-91-1	bis(2-Chloroethoxy)methane		104	ug/L	6.00	20.0
111-44-4	bis(2-Chloroethyl) ether		102	ug/L	6.00	20.0
39638-32-9	bis(2-Chloroisopropyl)ether		78.2	ug/L	6.00	20.0
117-81-7	bis(2-Ethylhexyl)phthalate		101	ug/L	6.00	20.0
65794-96-9	m,p-Cresols		104	ug/L	7.40	20.0
99-09-2	3-Nitroaniline		110	ug/L	6.00	20.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		94.5	ug/L	6.00	20.0
88-74-4	2-Nitroaniline		101	ug/L	6.00	20.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		141	ug/L	6.00	20.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	246	200	ug/L	123 (26%-129%)
2-Fluorobiphenyl	87.6	100	ug/L	87.6 (32%-102%)
2-Fluorophenol	150	200	ug/L	75.1 (10%-78%)
Nitrobenzene-d5	90.1	100	ug/L	90.1 (36%-125%)
Phenol-d5	119	200	ug/L	59.3 (10%-104%)
p-Terphenyl-d14	102	100	ug/L	102 (34%-135%)

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

SDG Number: 2014-2944
Lab Sample ID: 1203047901
Client Sample: QC for batch 1371071
Client ID: CAWA-14-54752MSD
Batch ID: 1371072
Run Date: 03/11/2014 12:41
Prep Date: 03/10/2014 11:35
Data File: s031114.B\s3c1110.D

Date Collected: 03/03/2014 12:08
Date Received: 03/05/2014 09:10
Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 500 mL
Column: DB-5ms

Matrix: W
Project: QC
SOP Ref: GL-OA-E-009
Dilution: 1
Inj. Vol: 1 uL
Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		60.5	ug/L	6.00	20.0
120-82-1	1,2,4-Trichlorobenzene		52.1	ug/L	6.00	20.0
95-50-1	1,2-Dichlorobenzene		48.0	ug/L	6.00	20.0
122-66-7	Azobenzene		75.3	ug/L	6.00	20.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		44.8	ug/L	6.00	20.0
106-46-7	1,4-Dichlorobenzene		43.3	ug/L	6.00	20.0
123-91-1	1,4-Dioxane		57.4	ug/L	6.00	20.0
58-90-2	2,3,4,6-Tetrachlorophenol		93.8	ug/L	6.00	20.0
95-95-4	2,4,5-Trichlorophenol		83.8	ug/L	6.00	20.0
88-06-2	2,4,6-Trichlorophenol		85.7	ug/L	6.00	20.0
120-83-2	2,4-Dichlorophenol		81.8	ug/L	6.00	20.0
105-67-9	2,4-Dimethylphenol		74.5	ug/L	6.00	20.0
51-28-5	2,4-Dinitrophenol		97.0	ug/L	10.0	40.0
121-14-2	2,4-Dinitrotoluene		93.0	ug/L	6.00	20.0
606-20-2	2,6-Dinitrotoluene		88.3	ug/L	6.00	20.0
91-58-7	2-Chloronaphthalene		69.8	ug/L	0.820	2.00
95-57-8	2-Chlorophenol		70.7	ug/L	6.00	20.0
534-52-1	2-Methyl-4,6-dinitrophenol		90.5	ug/L	6.00	20.0
88-75-5	2-Nitrophenol		80.1	ug/L	6.00	20.0
91-94-1	3,3'-Dichlorobenzidine		80.5	ug/L	6.00	20.0
101-55-3	4-Bromophenylphenylether		84.4	ug/L	6.00	20.0
59-50-7	Parachlorometa cresol		89.8	ug/L	6.00	20.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		88.2	ug/L	6.60	20.0
7005-72-3	4-Chlorophenylphenylether		91.0	ug/L	6.00	20.0
100-02-7	4-Nitrophenol		69.9	ug/L	6.00	20.0
62-53-3	Aniline		87.0	ug/L	8.40	20.0
1912-24-9	Atrazine		91.6	ug/L	6.00	20.0
92-87-5	Benzidine		137	ug/L	7.80	20.0
65-85-0	Benzoic acid		125	ug/L	12.0	40.0
100-51-6	Benzyl alcohol		78.3	ug/L	6.00	20.0
85-68-7	Butylbenzylphthalate		82.2	ug/L	6.00	20.0
84-74-2	Di-n-butylphthalate		76.1	ug/L	6.00	20.0
117-84-0	Di-n-octylphthalate		76.6	ug/L	6.00	20.0
132-64-9	Dibenzofuran		85.4	ug/L	6.00	20.0
84-66-2	Diethylphthalate		94.3	ug/L	6.00	20.0
131-11-3	Dimethylphthalate		84.6	ug/L	6.00	20.0
88-85-7	Dinoseb	U	20.0	ug/L	6.00	20.0

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

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SDG Number: 2014-2944
Lab Sample ID: 1203047901
Client Sample: QC for batch 1371071
Client ID: CAWA-14-54752MSD
Batch ID: 1371072
Run Date: 03/11/2014 12:41
Prep Date: 03/10/2014 11:35
Data File: s031114.B\s3c1110.D

Date Collected: 03/03/2014 12:08
Date Received: 03/05/2014 09:10
Client: ARSL004
Method: SW846 3510C/8270D
Inst: MSD3.I
Analyst: JLD1
Aliquot: 500 mL
Column: DB-5ms

Matrix: W
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		86.8	ug/L	6.00	20.0
87-68-3	Hexachlorobutadiene		49.0	ug/L	6.00	20.0
77-47-4	Hexachlorocyclopentadiene		42.4	ug/L	6.00	20.0
67-72-1	Hexachloroethane		42.3	ug/L	6.00	20.0
78-59-1	Isophorone		86.2	ug/L	7.00	20.0
62-75-9	N-Methyl-N-nitrosomethylamine		61.1	ug/L	6.00	20.0
924-16-3	N-Nitrosodi-n-butylamine	U	20.0	ug/L	6.00	20.0
55-18-5	N-Nitrosodiethylamine	U	20.0	ug/L	6.00	20.0
621-64-7	N-Nitrosodi--n-propylamine		80.0	ug/L	6.00	20.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		80.7	ug/L	6.00	20.0
98-95-3	Nitrobenzene		74.4	ug/L	6.00	20.0
608-93-5	Pentachlorobenzene	U	20.0	ug/L	6.00	20.0
108-95-2	Phenol		46.5	ug/L	6.00	20.0
110-86-1	Pyridine		77.6	ug/L	6.00	20.0
111-91-1	bis(2-Chloroethoxy)methane		86.5	ug/L	6.00	20.0
111-44-4	bis(2-Chloroethyl) ether		70.2	ug/L	6.00	20.0
39638-32-9	bis(2-Chloroisopropyl)ether		55.9	ug/L	6.00	20.0
117-81-7	bis(2-Ethylhexyl)phthalate		82.1	ug/L	6.00	20.0
65794-96-9	m,p-Cresols		78.4	ug/L	7.40	20.0
99-09-2	3-Nitroaniline		97.5	ug/L	6.00	20.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		72.4	ug/L	6.00	20.0
88-74-4	2-Nitroaniline		82.9	ug/L	6.00	20.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		135	ug/L	6.00	20.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	211	200	ug/L 105	(26%-129%)
2-Fluorobiphenyl	63.3	100	ug/L 63.3	(32%-102%)
2-Fluorophenol	106	200	ug/L 53.0	(10%-78%)
Nitrobenzene-d5	70.1	100	ug/L 70.1	(36%-125%)
Phenol-d5	87.8	200	ug/L 43.9	(10%-104%)
p-Terphenyl-d14	79.2	100	ug/L 79.2	(34%-135%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 12-MAR-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: 1371072	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 343999(2014-2932),344000(2014-2933),344061(2014-2938),344063(2014-2936),344112(2014-2944) Application Issues: Failed Recovery for MS/PS Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
1. The LCS(1203046758) recovered p-Nitroaniline at 134% and the limits are 38%-133%). 2. The MS(1203047900) displayed high spike recovery failures. Please see the QC Summary/Spike Recovery Report for specific failures. 3. The MSD(1203047901) recovered p-Nitroaniline at 135% and the limits are 25%-133%). 4. The MS(1203047900) and MS(1203047901) pair did not meet RPD value acceptance criteria for requested spike analytes. Please see the QC Summary/Spike Recovery Report for specific failures.		1.,2. & 3. Because these analytes were biased high and target analytes were not detected in the associated samples, the data are reported. 4. As the individual MS and MSD recoveries passed for the analytes associated with the RPD value failures, the failures had no adverse impact on the reported sample data. The data are reported.	

Originator's Name:

Jennifer Dunagan Jones12-MAR-14

Data Validator/Group Leader:

Herbert Maier 12-MAR-14

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-2944

Method/Analysis Information

Procedure: Polynuclear Aromatic Hydrocarbons
Analytical Method: SW846 8310
Prep Method: SW846 3510C
Analytical Batch Number: 1370891
Prep Batch Number: 1370888

Sample Analysis

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

Sample ID	Client ID
344112002	CAAN-14-54789
1203046315	Method Blank (MB)
1203046316	Laboratory Control Sample (LCS)
1203046317	344000002(CAWA-14-54752) Matrix Spike (MS)
1203046319	Laboratory Control Sample Duplicate (LCSD)

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

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP).

The data discussed in this narrative has been analyzed in accordance with GL-OA-E-030 REV# 15.

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

Calibration Information

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

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

CCV Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

Low recoveries for four target analytes were observed in the LCSD (1203046319). The recovery for Naphthalene was 42% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, the recovery for 1-Methylnaphthalene was 43% and the acceptance range is 55-96%, and the recovery for Benzo(k)fluoranthene was 67% and the acceptance range is 70-130%. The low recoveries observed in the LCSD may be the result of vagaries of the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.

LCS/LCSD Relative Percent Difference (RPD) Statement

High RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203046316/1203046319). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges. The high RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.

QC Sample Designation

Client sample 344000002 (CAWA-14-54752) from SDG 2014-2933 was chosen for matrix spike analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

There was only enough sample provided for one matrix spike.

MS/MSD Relative Percent Difference (RPD) Statement

There was only enough sample provided for one matrix spike.

Technical Information:**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

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

Data Exception Report 1274882 was generated for this SDG.

Low recoveries for four target analytes were observed in the LCSD (1203046319). The recovery for Naphthalene was 42% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, the recovery for 1-Methylnaphthalene was 43% and the acceptance range is 55-96%, and the recovery for Benzo(k)fluoranthene was 67% and the acceptance range is 70-130%. The low recoveries observed in the LCSD may be the result of vagaries of the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.

High RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203046316/1203046319). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges. The high RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.

Manual Integrations

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

Please see the raw data in the Miscellaneous Section.

Additional Comments

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

Electronic Package Comment

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

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

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

System Configuration

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

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

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

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

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

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

Chromatographic Columns

Chromatographic separation of Polynuclear Aromatic Hydrocarbons is accomplished through analysis on the following reversed phase 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: 2014-2944 GEL Work Order: 344112

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: Michael Penny

Date: 20 MAR 2014

Title: Group Leader

Roadmap for ARSL 2014-2944 HPLC_PAH

This roadmap was analyzed by cww on 03-17-2014, 17:25.

This roadmap was reviewed by map on 03-18-2014, 11:17.

This roadmap was packaged by map on 03-20-2014, 09:09.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p031114.b/ph5c1124.d	344112002	12-MAR-2014	02:34	2014-2944.sub	CAAN-14-54789	1	1370891	<input type="text"/>

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p031114.b/ph5c1112D.d	1203046315	mb	11-MAR-2014	18:08	2014-2944.sub	XBLK01	1	1370891	<input type="text"/>
<input type="checkbox"/>	N	/chem/hplce.i/p031114.b/ph5c1113D.d	1203046316	lcs	11-MAR-2014	18:50	2014-2944.sub	XBLK01LCS	1	1370891	<input type="text" value="Pass"/>
<input type="checkbox"/>	N	/chem/hplce.i/p031114.b/ph5c1114D.d	1203046319	lcsd	11-MAR-2014	19:32	2014-2944.sub	XBLK01LCSD	1	1370891	<input type="text" value="Low recoveries for 4 target analytes"/>

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-2944	Date Collected: 03/05/2014 11:32	Matrix: W
Lab Sample ID: 344112002	Date Received: 03/07/2014 09:10	
Client Sample: PAH	Client: ARSL004	Project: ESHL00714
Client ID: CAAN-14-54789	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1370891	Inst: HPLCE.I	Dilution: 1
Run Date: 03/12/2014 02:34	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 03/10/2014 13:15	Aliquot: 940 mL	Final Volume: 1 mL
Data File: ph5c1124.d	Column: C-18, DAD/FLD	Level: LOW

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	150	266	56.5	(21%-96%)

QC Summary

PAH by HPLC
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-2944

Matrix Type: LIQUID

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

Sample ID	Client ID	DFBF %REC
1203046315	MB for batch 1370888	48
1203046316	LCS for batch 1370888	49
1203046319	LCSD for batch 1370888	32
1203046317	CAWA-14-54752MS	49
344112002	CAAN-14-54789	57

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

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1370888

Matrix: WATER

Lab Sample ID 1203046316

Instrument: HPLCE.I

Analysis Date: 03/11/2014 18:50

Dilution: 1

Analyst: CWW

Prep Batch ID:1370888

Inj. Vol: 20 uL

Batch ID: 1370891

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	30.5	61	54-108
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	35.2	70	50-91
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	31.3	63	55-96
208-96-8	LCS Acenaphthylene	50.0	0.0	35.9	72	52-100
83-32-9	LCS Acenaphthene	50.0	0.0	35.5	71	53-107
86-73-7	LCS Fluorene	50.0	0.0	40.8	82	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	49.5	99	70-130
206-44-0	LCS Fluoranthene	5.00	0.0	4.26	85	70-130
129-00-0	LCS Pyrene	5.00	0.0	4.64	93	70-130
56-55-3	LCS Benzo(a)anthracene	5.00	0.0	4.52	90	70-130
218-01-9	LCS Chrysene	5.00	0.0	4.99	100	70-130
205-99-2	LCS Benzo(b)fluoranthene	5.00	0.0	4.41	88	70-130
207-08-9	LCS Benzo(k)fluoranthene	2.50	0.0	2.04	82	70-130
50-32-8	LCS Benzo(a)pyrene	5.00	0.0	4.62	92	70-130
193-39-5	LCS Indeno(1,2,3-cd)pyrene	5.00	0.0	4.49	90	57-114
53-70-3	LCS Dibenzo(a,h)anthracene	5.00	0.0	2.70	54	30-118
191-24-2	LCS Benzo(ghi)perylene	5.00	0.0	2.97	59	42-115

PAH by HPLC

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1370888

Matrix: WATER

Lab Sample ID 1203046319

Instrument: HPLCE.I

Analysis Date: 03/11/2014 19:32

Dilution: 1

Analyst: CWW

Prep Batch ID:1370888

Inj. Vol: 20 uL

Batch ID: 1370891

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	21.0	42 *	54-108	37 *	0-26
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	24.9	50	50-91	34 *	0-20
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	21.6	43 *	55-96	37 *	0-20
208-96-8	LCSD Acenaphthylene	50.0	0.0	27.7	55	52-100	26 *	0-20
83-32-9	LCSD Acenaphthene	50.0	0.0	28.0	56	53-107	24 *	0-20
86-73-7	LCSD Fluorene	50.0	0.0	35.9	72	62-130	13	0-20
85-01-8	LCSD Phenanthrene	50.0	0.0	38.2	76	69-130	11	0-20
120-12-7	LCSD Anthracene	50.0	0.0	42.4	85	70-130	16	0-20
206-44-0	LCSD Fluoranthene	5.00	0.0	3.72	74	70-130	14	0-20
129-00-0	LCSD Pyrene	5.00	0.0	4.04	81	70-130	14	0-20
56-55-3	LCSD Benzo(a)anthracene	5.00	0.0	3.88	78	70-130	15	0-20
218-01-9	LCSD Chrysene	5.00	0.0	4.23	85	70-130	17	0-20
205-99-2	LCSD Benzo(b)fluoranthene	5.00	0.0	3.70	74	70-130	17	0-20
207-08-9	LCSD Benzo(k)fluoranthene	2.50	0.0	1.67	67 *	70-130	20	0-20
50-32-8	LCSD Benzo(a)pyrene	5.00	0.0	3.77	75	70-130	20	0-20
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	5.00	0.0	3.28	66	57-114	31 *	0-20
53-70-3	LCSD Dibenzo(a,h)anthracene	5.00	0.0	1.97	39	30-118	31 *	0-20
191-24-2	LCSD Benzo(ghi)perylene	5.00	0.0	2.30	46	42-115	25 *	0-20

PAH by HPLC

Page 1 of 1

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAWA-14-54752MS

Matrix: W

Lab Sample ID 1203046317

Instrument: HPLCE.I

Analysis Date: 03/11/2014 21:39

Dilution: 1

Analyst: CWW

Prep Batch ID:1370888

Inj. Vol: 20 uL

Batch ID: 1370891

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	MS	Naphthalene	51.0	0.00	U	29.9	59	32-104
91-57-6	MS	2-Methylnaphthalene	51.0	0.00	U	34.3	67	56-130
90-12-0	MS	1-Methylnaphthalene	51.0	0.00	U	30.1	59	46-130
208-96-8	MS	Acenaphthylene	51.0	0.00	U	32.9	64	26-121
83-32-9	MS	Acenaphthene	51.0	0.00	U	32.8	64	27-118
86-73-7	MS	Fluorene	51.0	0.00	U	37.0	72	29-123
85-01-8	MS	Phenanthrene	51.0	0.00	U	38.4	75	35-126
120-12-7	MS	Anthracene	51.0	0.00	U	43.6	85	36-122
206-44-0	MS	Fluoranthene	5.10	0.00	U	3.70	73	32-134
129-00-0	MS	Pyrene	5.10	0.00	U	4.03	79	32-134
56-55-3	MS	Benzo(a)anthracene	5.10	0.00	U	3.86	76	35-129
218-01-9	MS	Chrysene	5.10	0.00	U	4.26	83	25-141
205-99-2	MS	Benzo(b)fluoranthene	5.10	0.00	U	3.67	72	29-133
207-08-9	MS	Benzo(k)fluoranthene	2.55	0.00	U	1.69	66	28-134
50-32-8	MS	Benzo(a)pyrene	5.10	0.00	U	3.78	74	25-135
193-39-5	MS	Indeno(1,2,3-cd)pyrene	5.10	0.00	U	3.37	66	25-135
53-70-3	MS	Dibenzo(a,h)anthracene	5.10	0.00	U	2.74	54	25-133
191-24-2	MS	Benzo(ghi)perylene	5.10	0.00	U	2.48	49	27-140

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1370888	Instrument ID:	HPLCE.I	Data File:	ph5c1112.d
Lab Sample ID:	1203046315	Prep Date:	03/10/2014 13:15	Analyzed:	03/11/14 18:08
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 1370888	1203046316	ph5c1113.d	03/11/14	1850
02 LCSD for batch 1370888	1203046319	ph5c1114.d	03/11/14	1932
03 CAWA-14-54752MS	1203046317	ph5c1117.d	03/11/14	2139
04 CAAN-14-54789	344112002	ph5c1124.d	03/12/14	0234

QC Data

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-2944

Lab Sample ID: 1203046315

Client Sample: QC for batch 1370888

Client ID: MB for batch 1370888

Batch ID: 1370891

Run Date: 03/11/2014 18:08

Prep Date: 03/10/2014 13:15

Data File: ph5c1112.d

Client: ARSL004

Method: SW846 8310

Inst: HPLCE.I

Analyst: CWW

Aliquot: 1000 mL

Column: C-18, DAD/FLD

Matrix: WATER

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	U	0.500	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
83-32-9	Acenaphthene	U	0.500	ug/L	0.150	0.500
208-96-8	Acenaphthylene	U	0.500	ug/L	0.150	0.500
120-12-7	Anthracene	U	0.500	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene	U	0.050	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene	U	0.050	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene	U	0.050	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene	U	0.050	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene	U	0.025	ug/L	0.008	0.025
218-01-9	Chrysene	U	0.050	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene	U	0.050	ug/L	0.016	0.050
206-44-0	Fluoranthene	U	0.050	ug/L	0.016	0.050
86-73-7	Fluorene	U	0.500	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.050	ug/L	0.016	0.050
91-20-3	Naphthalene	U	0.500	ug/L	0.150	0.500
85-01-8	Phenanthrene	U	0.500	ug/L	0.182	0.500
129-00-0	Pyrene	U	0.050	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	120	250	48.1	(21%-96%)

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

Page 1 of 1

SDG Number: 2014-2944

Lab Sample ID: 1203046316

Client Sample: QC for batch 1370888

Client ID: LCS for batch 1370888

Batch ID: 1370891

Run Date: 03/11/2014 18:50

Prep Date: 03/10/2014 13:15

Data File: ph5c1113.d

Client: ARSL004

Method: SW846 8310

Inst: HPLCE.I

Analyst: CWW

Aliquot: 1000 mL

Column: C-18, DAD/FLD

Matrix: WATER

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		31.3	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		35.2	ug/L	0.150	0.500
83-32-9	Acenaphthene		35.5	ug/L	0.150	0.500
208-96-8	Acenaphthylene		35.9	ug/L	0.150	0.500
120-12-7	Anthracene		49.5	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.52	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.62	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.41	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.97	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.04	ug/L	0.008	0.025
218-01-9	Chrysene		4.99	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.70	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.26	ug/L	0.016	0.050
86-73-7	Fluorene		40.8	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		4.49	ug/L	0.016	0.050
91-20-3	Naphthalene		30.5	ug/L	0.150	0.500
85-01-8	Phenanthrene		42.6	ug/L	0.182	0.500
129-00-0	Pyrene		4.64	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	123	250	49.4	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-2944

Lab Sample ID: 1203046319

Client Sample: QC for batch 1370888

Client ID: LCSD for batch 1370888

Batch ID: 1370891

Run Date: 03/11/2014 19:32

Prep Date: 03/10/2014 13:15

Data File: ph5c1114.d

Client: ARSL004

Method: SW846 8310

Inst: HPLCE.I

Analyst: CWW

Aliquot: 1000 mL

Column: C-18, DAD/FLD

Matrix: WATER

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		21.6	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		24.9	ug/L	0.150	0.500
83-32-9	Acenaphthene		28.0	ug/L	0.150	0.500
208-96-8	Acenaphthylene		27.7	ug/L	0.150	0.500
120-12-7	Anthracene		42.4	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		3.88	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		3.77	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		3.70	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.30	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		1.67	ug/L	0.008	0.025
218-01-9	Chrysene		4.23	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		1.97	ug/L	0.016	0.050
206-44-0	Fluoranthene		3.72	ug/L	0.016	0.050
86-73-7	Fluorene		35.9	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.28	ug/L	0.016	0.050
91-20-3	Naphthalene		21.0	ug/L	0.150	0.500
85-01-8	Phenanthrene		38.2	ug/L	0.182	0.500
129-00-0	Pyrene		4.04	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	80.0	250	ug/L	32.0 (21%-96%)

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

Page 1 of 1

SDG Number:	2014-2944	Date Collected:	03/03/2014 12:08	Matrix:	W
Lab Sample ID:	1203046317	Date Received:	03/05/2014 09:00		
Client Sample:	QC for batch 1370888	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54752MS	Method:	SW846 8310	SOP Ref:	GL-OA-E-030
Batch ID:	1370891	Inst:	HPLCE.I	Dilution:	1
Run Date:	03/11/2014 21:39	Analyst:	CWW	Inj. Vol:	20 uL
Prep Date:	03/10/2014 13:15	Aliquot:	980 mL	Final Volume:	1 mL
Data File:	ph5c1117.d	Column:	C-18, DAD/FLD	Level:	LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		30.1	ug/L	0.222	0.510
91-57-6	2-Methylnaphthalene		34.3	ug/L	0.153	0.510
83-32-9	Acenaphthene		32.8	ug/L	0.153	0.510
208-96-8	Acenaphthylene		32.9	ug/L	0.153	0.510
120-12-7	Anthracene		43.6	ug/L	0.153	0.510
56-55-3	Benzo(a)anthracene		3.86	ug/L	0.0163	0.051
50-32-8	Benzo(a)pyrene		3.78	ug/L	0.0163	0.051
205-99-2	Benzo(b)fluoranthene		3.67	ug/L	0.0163	0.051
191-24-2	Benzo(ghi)perylene		2.48	ug/L	0.0163	0.051
207-08-9	Benzo(k)fluoranthene		1.69	ug/L	0.00816	0.0255
218-01-9	Chrysene		4.26	ug/L	0.0163	0.051
53-70-3	Dibenzo(a,h)anthracene		2.74	ug/L	0.0163	0.051
206-44-0	Fluoranthene		3.70	ug/L	0.0163	0.051
86-73-7	Fluorene		37.0	ug/L	0.153	0.510
193-39-5	Indeno(1,2,3-cd)pyrene		3.37	ug/L	0.0163	0.051
91-20-3	Naphthalene		29.9	ug/L	0.153	0.510
85-01-8	Phenanthrene		38.4	ug/L	0.186	0.510
129-00-0	Pyrene		4.03	ug/L	0.0163	0.051

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	125	255	49.2	(21%-96%)

Miscellaneous Data

DATA EXCEPTION REPORT

Mo.Day Yr. 14-MAR-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: HPLC	Test / Method: SW846 8310	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1370891	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 343999(2014-2932),344000(2014-2933),344061(2014-2938),344063(2014-2936),344112(2014-2944),344227(2014-2943) Application Issues: Failed RPD for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Low recoveries for four target analytes were observed in the LCSD (1203046319). The recovery for Naphthalene was 42% and the acceptance range is 54-108%, the recovery for 2-Methylnaphthalene was 49.8% and the acceptance range is 50-91%, the recovery for 1-Methylnaphthalene was 43% and the acceptance range is 55-96%, and the recovery for Benzo(k)fluoranthene was 67% and the acceptance range is 70-130%.</p> <p>2. High RPD values were observed for multiple target analytes in the LCS/LCSD pair (1203046316/1203046319). Please see the Form 3 in the data package for a complete list of recoveries and the acceptance ranges.</p>		<p>1. The low recoveries observed in the LCSD may be the result of vagaries of the extraction process. The lower spike recoveries of the associated target analytes coincided with lower surrogate recovery than that observed in the LCS. The LCS met spike recovery limits for all target analytes. Target analytes were not detected in the associated samples. The project manager was contacted and permission was granted to report the data with the appropriate DER.</p> <p>2. The high RPD values were the result of lower recoveries observed in the LCSD. The data are reported with the appropriate DER.</p>	

Originator's Name:

Charles Wilson 17-MAR-14

Data Validator/Group Leader:

Michael Penny 18-MAR-14

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International, LLC (ARSL)
SDG 2014-2944**

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: 1371025

Prep Batch Number: 1371024

Sample Analysis

Sample ID	Client ID
344112007	CAAN-14-54791
1203046621	Interference Check Sample (ICS)
1203046617	Method Blank (MB)
1203046618	Laboratory Control Sample (LCS)
1203046619	344000007(CAWA-14-54773) Matrix Spike (MS)
1203046620	344000007(CAWA-14-54773) 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 344000007 (CAWA-14-54773) from SDG 2014-2933 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: 2014-2944 GEL Work Order: 344112

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: 14 MAR 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAAN-14-54791Date Received: 07-MAR-14GEL Job No (SDG): 2014-2944GEL Sample ID: 344112007Date Filtered: 10-MAR-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	0.230	ug/L		1	10-MAR-14 17:14	per0310027a
	Perchlorate Isotope Ratio			3.01			1	10-MAR-14 17:14	per0310027a
14797-73-0	Perchlorate-101	.05	.2	0.231	ug/L		1	10-MAR-14 17:14	per0310027a
	Perchlorate-O(18)			0.471	ug/L		1	10-MAR-14 17:14	per0310027a

^ 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): 2014-2944

Extract Batch Code: 1371024

Date Filtered: 10-MAR-14

Matrix: WATER

Sample ID: 1203046618

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.212	ug/L	106		85 - 115
Perchlorate Isotope Ratio		3.14				-
Perchlorate-101	0.200	.205	ug/L	103		85 - 115
Perchlorate-O(18)		.528	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): 2014-2944

Extract Batch Code: 1371024

Date Extracted: 10-MAR-14

GEL MS/PS ID: 1203046619

Client ID: CAWA-14-54773

GEL MSD/PSD ID: 1203046620

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	0.223	ug/L	0.415	95.7	.417	96.6	.474	30	75 - 125
Perchlorate Isotope Ratio	0	2.87		3.01		2.96		1.61		-
Perchlorate-101	0.200	0.237	ug/L	0.419	90.9	.427	95.4	2.09	30	75 - 125
Perchlorate-O(18)	0	0.485	ug/L	0.491		.498		1.51		-

^ 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 10-MAR-14GEL Job No (SDG): 2014-2944GEL Sample ID: 1203046617Date Filtered: 10-MAR-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	10-MAR-14 15:07	per0310012a
	Perchlorate Isotope Ratio						1	10-MAR-14 15:07	per0310012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	10-MAR-14 15:07	per0310012a
	Perchlorate-O(18)			0.502	ug/L		1	10-MAR-14 15:07	per0310012a

^ 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 10-MAR-14GEL Job No (SDG): 2014-2944GEL Sample ID: 1203046618Date Filtered: 10-MAR-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	0.212	ug/L		1	10-MAR-14 15:16	per0310013a
	Perchlorate Isotope Ratio			3.14			1	10-MAR-14 15:16	per0310013a
14797-73-0	Perchlorate-101	.05	.2	0.205	ug/L		1	10-MAR-14 15:16	per0310013a
	Perchlorate-O(18)			0.528	ug/L		1	10-MAR-14 15:16	per0310013a

^ 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2014-2944GEL Sample ID: 1203046621Date Filtered: 10-MAR-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	0.195	ug/L	J	1	10-MAR-14 15:24	per0310014a
	Perchlorate Isotope Ratio			3.03			1	10-MAR-14 15:24	per0310014a
14797-73-0	Perchlorate-101	.05	.2	0.195	ug/L	J	1	10-MAR-14 15:24	per0310014a
	Perchlorate-O(18)			0.494	ug/L		1	10-MAR-14 15:24	per0310014a

^ 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-14-54773MSDate Received: 05-MAR-14GEL Job No (SDG): 2014-2944GEL Sample ID: 1203046619Date Filtered: 10-MAR-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	0.415	ug/L		1	10-MAR-14 16:07	per0310019a
	Perchlorate Isotope Ratio			3.01			1	10-MAR-14 16:07	per0310019a
14797-73-0	Perchlorate-101	.05	.2	0.419	ug/L		1	10-MAR-14 16:07	per0310019a
	Perchlorate-O(18)			0.491	ug/L		1	10-MAR-14 16:07	per0310019a

^ 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: 1371024Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAWA-14-54773MSDDate Received: 05-MAR-14GEL Job No (SDG): 2014-2944GEL Sample ID: 1203046620Date Filtered: 10-MAR-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	0.417	ug/L		1	10-MAR-14 16:15	per0310020a
	Perchlorate Isotope Ratio			2.96			1	10-MAR-14 16:15	per0310020a
14797-73-0	Perchlorate-101	.05	.2	0.427	ug/L		1	10-MAR-14 16:15	per0310020a
	Perchlorate-O(18)			0.498	ug/L		1	10-MAR-14 16:15	per0310020a

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

*Concentration =

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

Explosives by LCMSMS Analysis

Case Narrative

**LC-MS/MS Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2944**

Method/Analysis Information

Procedure: **Definitive Low Level Analysis of Nitroaromatic Explosives Utilizing Liquid Chromatography-Mass Spectrometry/Mass Spectrometry (LC-MS/MS) by SW-846 Method 8321 Modified (8321M)**

Analytical Method: SW846 3535/8321A Modified

Prep Method: SW846 Method 3535

Analytical Batch Number: 1372044

Prep Batch Number: 1372042

Sample Analysis

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

Sample ID	Client ID
344112003	CAAN-14-54789
1203049042	Method Blank (MB)
1203049043	344332012(CAWA-14-54783) Matrix Spike (MS)
1203049044	344332012(CAWA-14-54783) Matrix Spike Duplicate (MSD)
1203049045	Laboratory Control Sample (LCS)

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP).

The data discussed in this narrative has been analyzed in accordance with GL-OA-E-056 REV# 17.

Primary Analyte Analysis

Calibration Information

Initial Calibration

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

Calibration Verification Standard Requirements

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

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

Calibration Blank Requirements

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

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

CRI Requirements

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

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

The MB analyzed with this SDG for this analysis met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 344332012 (CAWA-14-54783) from SDG 2014-2960 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

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

Matrix Spike Duplicate (MSD) Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

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

Technical Information**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

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

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

Sample Re-extraction/Re-analysis

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

Secondary Analyte Analysis**Calibration Information****Initial Calibration**

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

Calibration Verification Standard Requirements

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

Calibration Blank Requirements

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

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

CRI Requirements

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

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

The MB analyzed with this SDG for this analysis met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 344332012 (CAWA-14-54783) from SDG 2014-2960 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

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

Matrix Spike Duplicate (MSD) Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

The internal standard was not added to the Secondary analyte extracts.

Technical Information**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

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

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

Sample Re-extraction/Re-analysis

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

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

Data Exception Report 1278095 was generated for this SDG.

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

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

Manual Integrations

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

Additional Comments

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

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

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Primary analyte analysis. It is coupled with a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1, and LCMSMS #2, respectively. It is fitted with an APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for the Primary analyte analysis.

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

Electronic Packaging Comment

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

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

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

Chromatographic Columns

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

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

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112


The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 28 MAR 2014

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAAN-14-54789

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 344112003

Sample Amount 960 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319028.wiff

Date Analyzed: 20-MAR-14 03:05

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.260	U	0.0833	0.260
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.260	U	0.0833	0.260
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.260	U	0.0833	0.260
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.260	U	0.0833	0.260
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.260	U	0.0833	0.260
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.260	U	0.0833	0.260
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	0.260	U	0.0833	0.260
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	0.260	U	0.0854	0.260
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.260	QU	0.0833	0.260
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.260	U	0.0833	0.260
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	0.260	U	0.0833	0.260
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	0.260	U	0.0833	0.260
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	0.521	U	0.0833	0.521
<i>479-45-8</i>	<i>Tetryl</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAAN-14-54789

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 344112003

Sample Amount 960 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	0.521	U	0.104	0.521
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	0.521	U	0.156	0.521
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAAN-14-54789

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 344112003

Sample Amount 960 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXS03240024.wiff

Date Analyzed: 24-MAR-14 22:49

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.04	U	0.313	1.04
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	1.04	U	0.313	1.04
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	1.04	U	0.313	1.04
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.60	U	0.521	2.60
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.60	U	0.521	2.60
6629-29-4	2,4-Diamino-6-nitrotoluene				

Quality Control Summary

High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 2014-2944Lab Code: GEL

HPLC Column: Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
344112003	CAAN-14-54789	85.6	69 - 120	
1203049042	MB for batch 1372042	80.4	69 - 120	
1203049043	CAWA-14-54783MS	88.8	69 - 120	
1203049044	CAWA-14-54783MSD	87.2	69 - 120	
1203049045	LCS for batch 1372042	82.8	69 - 120	

DNT = 3,4-Dinitrotoluene

Lab Code: GEL

HPLC Column: YMC J'sphere ODS-H80

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
344112003	CAAN-14-54789	114	69 - 120	
1203049042	MB for batch 1372042	102	69 - 120	
1203049043	CAWA-14-54783MS	108	69 - 120	
1203049044	CAWA-14-54783MSD	102	69 - 120	
1203049045	LCS for batch 1372042	112	69 - 120	

DNT = 3,4-Dinitrotoluene

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL LCS ID: 1203049045

GEL LCSDUP ID: .

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

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

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

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

* Values outside of QC limits

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL LCS ID: 1203049045

GEL LCSDUP ID: .

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

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

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

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

* Values outside of QC limits

3
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL Spike ID: 1203049043

GEL SpikeDup ID: 1203049044

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

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

Reporting Units: ug/L

QC Type: MS/MSD

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

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

3
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAWA-14-54783

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Extract Batch Code: 1372042

Date Extracted: 12-MAR-14

GEL Spike ID: 1203049043

GEL SpikeDup ID: 1203049044

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

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

Reporting Units: ug/L

QC Type: MS/MSD

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

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

Quality Control Data

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319026.wiff

Date Analyzed: 20-MAR-14 01:55

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049042

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXS03250014.wiff

Date Analyzed: 25-MAR-14 14:50

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319041.wiff

Date Analyzed: 20-MAR-14 10:41

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049043

Sample Amount 950 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXS03250016.wiff

Date Analyzed: 25-MAR-14 15:24

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319042.wiff

Date Analyzed: 20-MAR-14 11:16

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

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

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049044

Sample Amount 915 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXS03250017.wiff

Date Analyzed: 25-MAR-14 15:40

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0319027.wiff

Date Analyzed: 20-MAR-14 02:30

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1372042

Lab Code: GEL

GEL Job No (SDG) 2014-2944

Matrix: WATER

GEL Sample ID: 1203049045

Sample Amount 1000 mL

Date Received: 07-MAR-14

Moisture: .

Extraction Batch ID: 1372042

Extraction Type Sol Exchange

Date Extracted: 12-MAR-14

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXS03240023.wiff

Date Analyzed: 24-MAR-14 22:33

Dilution Factor: 2

Concentration Units: ug/L

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 19-MAR-14 11:20GEL Data File: EXP0319001.wiffInstrument ID: LCMSMS3Column: Ultracarb Phenomenex 5u ODS (20)

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 19-MAR-14 11:55GEL Data File: EXP0319002.wiffInstrument ID: LCMSMS3Column: Ultracarb Phenomenex 5u ODS (20)

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 24-MAR-14 16:25GEL Data File: EXS03240001.wiffInstrument ID: LCMSMS4Column: YMC J'sphere ODS-H80

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 24-MAR-14 16:41GEL Data File: EXS03240002.wiffInstrument ID: LCMSMS4Column: YMC J'sphere ODS-H80

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-MAR-14 11:13GEL Data File: EXS03250001.wiffInstrument ID: LCMSMS4Column: YMC J'sphere ODS-H80

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2014-2944Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 25-MAR-14 11:29GEL Data File: EXS03250002.wiffInstrument ID: LCMSMS4Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 19-MAR-14 16:00

GEL Data File: EXP0319009.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 19-MAR-14 17:10

GEL Data File: EXP0319011.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 19-MAR-14 23:35

GEL Data File: EXP0319022.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 20-MAR-14 00:45

GEL Data File: EXP0319024.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 20-MAR-14 07:11

GEL Data File: EXP0319035.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 20-MAR-14 08:21

GEL Data File: EXP0319037.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 20-MAR-14 11:51

GEL Data File: EXP0319043.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 20-MAR-14 15:56

GEL Data File: EXP0319050.wiff

Instrument ID: LCMSMS3

Column: Ultracarb Phenomenex 5u ODS (20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 24-MAR-14 18:55

GEL Data File: EXS03240010.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 24-MAR-14 19:28

GEL Data File: EXS03240012.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 24-MAR-14 21:42

GEL Data File: EXS03240020.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 25-MAR-14 00:46

GEL Data File: EXS03240031.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 25-MAR-14 01:20

GEL Data File: EXS03240033.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 25-MAR-14 13:43

GEL Data File: EXS03250010.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 25-MAR-14 14:17

GEL Data File: EXS03250012.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 25-MAR-14 16:30

GEL Data File: EXS03250020.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2014-2944

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 25-MAR-14 17:04

GEL Data File: EXS03250022.wiff

Instrument ID: LCMSMS4

Column: YMC J'sphere ODS-H80

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 27-MAR-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LC-MS/MS	Test / Method: SW846 3535/8321A Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1372044	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 344112(2014-2944),344227(2014-2943),344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960) Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The MS (1203049043) did not meet acceptance criteria for the recovery of TATB at 128%. The limits are 39-112%. 2. The MSD (1203049044) did not meet acceptance criteria for the recovery of TATB at 129%. The limits are 39-112%.		1. & 2. Since similar recoveries were obtained between matrix spikes, the noted exceptions are attributed to sample matrix interference. TATB was not detected in the parent sample, 344332012 (CAWA-14-547832). The LCS (1203049045) met acceptance criteria for all target analytes, therefore the data are reported with the appropriate DER. The discrepancies are noted in the Case Narrative.	

Originator's Name:

Lynne Russell 28-MAR-14

Data Validator/Group Leader:

Michael Penny 28-MAR-14

Pesticide Analysis

Case Narrative

Pesticide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2944

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:	1370963
Prep Batch Number:	1370962

Sample Analysis

Sample ID	Client ID
344112001	CAAN-14-54789
344112008	CAAN-14-54787
1203046503	Method Blank (MB)
1203046504	Laboratory Control Sample (LCS)
1203046505	Laboratory Control Sample Duplicate (LCSD)

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

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-059 REV# 12.

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

Calibration Information

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

Initial Calibration

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. All analytes were

within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The laboratory control sample (LCS) spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The laboratory control sample duplicate (LCSD) spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD values between the LCS and LCSD met the acceptance limits.

QC Sample Designation

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

Matrix Spike (MS) Recovery Statement

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

Matrix Spike Duplicate (MSD) Recovery Statement

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

MS/MSD Relative Percent Difference (RPD) Statement

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

Technical Information:

Holding Time Specifications

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

Sample preservation

The following sample had a pH of 2: 344112008 (CAAN-14-54787).

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

Miscellaneous Information:

Electronic Package Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation

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

Manual Integrations

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

Additional Comments

The higher result is reported.

System Configuration

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

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

Method/Analysis Information

Procedure: Organochlorine Pesticides and Chlorinated Hydrocarbons

Analytical Method: SW846 3535A/8081B

Prep Method: SW846 3535A

Analytical Batch Number: 1371568

Prep Batch Number: 1371567

Sample Analysis

Sample ID	Client ID
344112005	CAAN-14-54789
1203047969	Method Blank (MB)
1203047970	Laboratory Control Sample (LCS)
1203047971	344112005(CAAN-14-54789) Matrix Spike (MS)
1203047973	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

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

Laboratory Control Sample (LCS) Recovery

The laboratory control sample (LCS) spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The laboratory control sample duplicate (LCSD) spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD values between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 344112005 (CAAN-14-54789) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS, 1203047971 (CAAN-14-54789), recovered Hexachlorobenzene at 0% on both columns. The limits are 50-150%. It appears that the MS was not spiked with Hexachlorobenzene. A MSD was not extracted. The LCS and LCSD passed Hexachlorobenzene recovery. The data are reported.

Matrix Spike Duplicate (MSD) Recovery Statement

Matrix spike duplicate analysis was not performed on a sample in this batch for this SDG.

MS/MSD Relative Percent Difference (RPD) Statement

Matrix spike duplicate analysis was not performed on a sample in this batch for this SDG.

Technical Information:

Holding Time Specifications

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

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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 1274096 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: 2014-2944 GEL Work Order: 344112

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: 01 APR 2014

Title: Group Leader

Sample Data Summary

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/05/2014 11:32	Matrix:	W
Lab Sample ID:	344112001	Date Received:	03/07/2014 09:10		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAAN-14-54789	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1370963	Inst:	ECD1A.I	Dilution:	1
Run Date:	03/12/2014 17:11	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	03/12/2014 12:30	Aliquot:	35.58 mL	Final Volume:	35 mL
Data File:	031214HE\E1C1221.D	Column:	1 ZB-50		
	031214HE\E1C1221.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0197	ug/L	0.0059	0.0197	1
106-93-4	1,2-Dibromoethane	U	0.0197	ug/L	0.0059	0.0197	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.54	3.51	ug/L	101	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/05/2014 11:32	Matrix:	W
Lab Sample ID:	344112005	Date Received:	03/07/2014 09:10		
Client Sample:	HCB	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAAN-14-54789	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1371568	Inst:	ECD7A.I	Dilution:	1
Run Date:	03/11/2014 18:12	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	03/11/2014 05:30	Aliquot:	950 mL	Final Volume:	5 mL
Data File:	031114.B\c1121.D	Column:	1 CLPesticides		
	031114.B\c1121.D		2 CLPesticides2		

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	0.870	1.05	ug/L	82.7	(36%-106%)
Decachlorobiphenyl	1.03	1.05	ug/L	97.4	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-2944	Date Collected:	03/05/2014 11:32	Matrix:	W
Lab Sample ID:	344112008	Date Received:	03/07/2014 09:10		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAAN-14-54787	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1370963	Inst:	ECD1A.I	Dilution:	1
Run Date:	03/12/2014 17:32	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	03/12/2014 12:30	Aliquot:	35.4 mL	Final Volume:	35 mL
Data File:	031214HE\E1C1222.D	Column:	1 ZB-50		
	031214HE\E1C1222.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0198	ug/L	0.00593	0.0198	1
106-93-4	1,2-Dibromoethane	U	0.0198	ug/L	0.00593	0.0198	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.98	3.53	ug/L	113	(73%-135%)	

Quality Control Summary

Pesticide
Surrogate Recovery Report

Page 1 of 2

SDG Number: 2014-2944**Matrix Type: LIQUID**

Sample ID	Client ID	BFB 1	BFB 2
		%REC #	%REC #
1203046503	MB for batch 1370962	103	105
1203046504	LCS for batch 1370962	102	120
1203046505	LCSD for batch 1370962	105	119
344112001	CAAN-14-54789	101	98
344112008	CAAN-14-54787	113	103

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: 2014-2944**Matrix Type: LIQUID**

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203047969	MB for batch 1371567	81	75	99	99
1203047970	LCS for batch 1371567	86	79	92	93
1203047973	LCSD for batch 1371567	80	74	93	92
344112005	CAAN-14-54789	89	83	98	97
1203047971	CAAN-14-54789MS	101	94	120	120

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

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1370962

Matrix: WATER

Lab Sample ID 1203046504

Instrument: ECD1A.I

Analysis Date: 03/12/2014 12:37

Dilution: 1

Analyst: RXE1

Prep Batch ID:1370962

Inj. Vol: 1 uL

Batch ID: 1370963

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	0.208	104	70-130
96-12-8	LCS 1,2-Dibromo-3-chloropropane	0.200	0.0	0.211	105	70-130

Pesticide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1370962

Matrix: WATER

Lab Sample ID 1203046505

Instrument: ECD1A.I

Analysis Date: 03/12/2014 12:58

Dilution: 1

Analyst: RXE1

Prep Batch ID:1370962

Inj. Vol: 1 uL

Batch ID: 1370963

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	0.203	101	70-130	2	0-20
96-12-8	LCSD 1,2-Dibromo-3-chloropropane	0.200	0.0	0.205	103	70-130	3	0-20

Pesticide

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1371567

Matrix: WATER

Lab Sample ID 1203047970

Instrument: ECD7A.I

Analysis Date: 03/11/2014 17:12

Dilution: 1

Analyst: LOF

Prep Batch ID:1371567

Inj. Vol: 1 uL

Batch ID: 1371568

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	0.0838	84	50-150

Pesticide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1371567

Matrix: WATER

Lab Sample ID 1203047973

Instrument: ECD7A.I

Analysis Date: 03/11/2014 17:27

Dilution: 1

Analyst: LOF

Prep Batch ID:1371567

Inj. Vol: 1 uL

Batch ID: 1371568

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	0.0782	78	50-150	7	0-30

Pesticide

Page 1 of 1

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAAN-14-54789MS

Matrix: W

Lab Sample ID 1203047971

Instrument: ECD7A.I

Analysis Date: 03/11/2014 18:27

Dilution: 1

Analyst: LOF

Prep Batch ID:1371567

Inj. Vol: 1 uL

Batch ID: 1371568

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS Hexachlorobenzene	0.104	0.00 U	0.00	0 *	50-150

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1370962	Instrument ID:	ECD1A.I_1	Data File:	031214HE\E1C1207.D
Lab Sample ID:	1203046503		ECD1A.I_2		031214HE\E1C1207.D
Column:	ZB-50	Prep Date:	03/12/2014 11:51	Analyzed:	03/12/14 12:16
	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 1370962	1203046504	031214HE\E1C1208.D 031214HE\E1C1208.D	03/12/14	1237
02 LCSD for batch 1370962	1203046505	031214HE\E1C1209.D 031214HE\E1C1209.D	03/12/14	1258
03 CAAN-14-54789	344112001	031214HE\E1C1221.D 031214HE\E1C1221.D	03/12/14	1711
04 CAAN-14-54787	344112008	031214HE\E1C1222.D 031214HE\E1C1222.D	03/12/14	1732

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1371567	Instrument ID:	ECD7A.I_1	Data File:	031114.B\ e7c1116.D
Lab Sample ID:	1203047969		ECD7A.I_2		031114.B\ e7c1116.D
Column:	CLPesticides	Prep Date:	03/11/2014 05:30	Analyzed:	03/11/14 16:57
	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 1371567	1203047970	031114.B\ e7c1117.D 031114.B\ e7c1117.D	03/11/14	1712
02 LCSD for batch 1371567	1203047973	031114.B\ e7c1118.D 031114.B\ e7c1118.D	03/11/14	1727
03 CAAN-14-54789	344112005	031114.B\ e7c1121.D 031114.B\ e7c1121.D	03/11/14	1812
04 CAAN-14-54789MS	1203047971	031114.B\ e7c1122.D 031114.B\ e7c1122.D	03/11/14	1827

Quality Control Data

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203046503		
Client Sample:	QC for batch 1370962	Client:	ARSL004
Client ID:	MB for batch 1370962	Method:	SW846 8011
Batch ID:	1370963	Inst:	ECD1A.I
Run Date:	03/12/2014 12:16	Analyst:	RXE1
Prep Date:	03/12/2014 11:51	Aliquot:	35 mL
Data File:	031214HE\E1C1207.D	Column:	1 ZB-50
	031214HE\E1C1207.D		2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.74	3.57	ug/L	105	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203046504		
Client Sample:	QC for batch 1370962	Client:	ARSL004
Client ID:	LCS for batch 1370962	Method:	SW846 8011
Batch ID:	1370963	Inst:	ECD1A.I
Run Date:	03/12/2014 12:37	Analyst:	RXE1
Prep Date:	03/12/2014 11:51	Aliquot:	35 mL
Data File:	031214HE\E1C1208.D	Column:	1 ZB-50
	031214HE\E1C1208.D		2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.211	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.208	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.30	3.57	ug/L	120	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-2944	Matrix: WATER
Lab Sample ID: 1203046505	
Client Sample: QC for batch 1370962	Client: ARSL004
Client ID: LCSD for batch 1370962	Method: SW846 8011
Batch ID: 1370963	Inst: ECD1A.I
Run Date: 03/12/2014 12:58	Analyst: RXE1
Prep Date: 03/12/2014 11:51	Aliquot: 35 mL
Data File: 031214HE\E1C1209.D	Column: 1 ZB-50
	2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.205	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.203	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.25	3.57	ug/L	119	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203047969		
Client Sample:	QC for batch 1371567	Client:	ARSL004
Client ID:	MB for batch 1371567	Method:	SW846 3535A/8081B
Batch ID:	1371568	Inst:	ECD7A.I
Run Date:	03/11/2014 16:57	Analyst:	LOF
Prep Date:	03/11/2014 05:30	Aliquot:	1000 mL
Data File:	031114.B\c1116.D	Column:	1 CLPesticides
	031114.B\c1116.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		0.750	1.00	ug/L	75.0	(36%-106%)	
Decachlorobiphenyl		0.992	1.00	ug/L	99.2	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203047970		
Client Sample:	QC for batch 1371567	Client:	ARSL004
Client ID:	LCS for batch 1371567	Method:	SW846 3535A/8081B
Batch ID:	1371568	Inst:	ECD7A.I
Run Date:	03/11/2014 17:12	Analyst:	LOF
Prep Date:	03/11/2014 05:30	Aliquot:	1000 mL
Data File:	031114.B\c1117.D	Column:	1 CLPesticides
	031114.B\c1117.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0838	ug/L	0.00625	0.020	2
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Decachlorobiphenyl		0.925	1.00	ug/L	92.5	(41%-124%)	
4cmx		0.793	1.00	ug/L	79.3	(36%-106%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/05/2014 11:32	Matrix:	W
Lab Sample ID:	1203047971	Date Received:	03/07/2014 09:10		
Client Sample:	QC for batch 1371567	Client:	ARSL004	Project:	QC
Client ID:	CAAN-14-54789MS	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1371568	Inst:	ECD7A.I	Dilution:	1
Run Date:	03/11/2014 18:27	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	03/11/2014 05:30	Aliquot:	960 mL	Final Volume:	5 mL
Data File:	031114.B\c1122.D	Column:	1 CLPesticides		
	031114.B\c1122.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0208	ug/L	0.00651	0.0208	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.982	1.04	ug/L	94.3	(36%-106%)
Decachlorobiphenyl	1.25	1.04	ug/L	120	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-2944	Matrix:	WATER
Lab Sample ID:	1203047973		
Client Sample:	QC for batch 1371567	Client:	ARSL004
Client ID:	LCSD for batch 1371567	Method:	SW846 3535A/8081B
Batch ID:	1371568	Inst:	ECD7A.I
Run Date:	03/11/2014 17:27	Analyst:	LOF
Prep Date:	03/11/2014 05:30	Aliquot:	1000 mL
Data File:	031114.B\c1118.D	Column:	1 CLPesticides
	031114.B\c1118.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0782	ug/L	0.00625	0.020	2
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Decachlorobiphenyl		0.934	1.00	ug/L	93.4	(41%-124%)	
4cmx		0.743	1.00	ug/L	74.3	(36%-106%)	

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-MAR-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: 1371568	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 344061(2014-2938),344063(2014-2936),344112(2014-2944),344227(2014-2943) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The 1203047971MS recovered Hexachlorobenzene at 0% on both columns. The limits are 50-150%.		1. It appears that the MS was not spiked with Hexachlorobenzene. A MSD was not extracted. The LCS and LCSD passed Hexachlorobenzene recovery. The data are reported.	

Originator's Name:

Lloyd O Fox 12-MAR-14

Data Validator/Group Leader:

Herbert Maier 13-MAR-14

Herbicide Analysis

Case Narrative

**Herbicide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2944**

Method/Analysis Information

Procedure: Analysis of Chlorophenoxy Acid Herbicides by ECD

Analytical Method: SW846 8151A

Prep Method: SW846 8151A

Analytical Batch Number: 1370893

Prep Batch Number: 1370892

Sample Analysis

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

Sample ID	Client ID
344112006	CAAN-14-54789
1203046320	Method Blank (MB)
1203046321	Laboratory Control Sample (LCS)
1203046322	344000006(CAWA-14-54752) Matrix Spike (MS)
1203046324	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 Initial Calibration Verification (ICV) requirements have been met for this SDG. However, not all Calibration Verification Standards (CCV) requirements were met. Pentachlorophenol failed acceptance criteria with a positive bias on one analytical column in the standards bracketing the samples in this SDG. The positive bias for the analytical data is a result of instrument response increasing after the initial calibration. Since the target analyte was not detected in the sample 344112006 (CAAN-14-54789), the non-compliance had no adverse impact on the data. The surrogate also failed acceptance criteria with a positive bias on one analytical column in

the standards bracketing the samples in this SDG; however, this non-compliance has no adverse effects on the data as the surrogate recovery was well within the acceptance range in the samples in this SDG. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this 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 RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 344000006 (CAWA-14-54752) 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 recoveries for this SDG were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

There was no matrix spike duplicate extracted and analyzed 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

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 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 samples, 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)
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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: 2014-2944 GEL Work Order: 344112

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: 26 MAR 2014

Title: Data Validator

Sample Data Summary

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/05/2014 11:32	Matrix:	W
Lab Sample ID:	344112006	Date Received:	03/07/2014 09:10		
Client Sample:	PCP	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAAN-14-54789	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1370893	Inst:	ECD6A.I	Dilution:	1
Run Date:	03/14/2014 04:26	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	03/10/2014 10:00	Aliquot:	960 mL	Final Volume:	10 mL
Data File:	031314\E6c1324.D	Column:	1 CLP		
	031314\E6c1324.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.260	ug/L	0.0521	0.260	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.13	5.21	98.5	(43%-137%)

Quality Control Summary

Herbicide
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-2944**Matrix Type: LIQUID**

Sample ID	Client ID	DCAA 1	DCAA 2
		%REC #	%REC #
1203046320	MB for batch 1370892	93	84
1203046321	LCS for batch 1370892	111	107
1203046324	LCSD for batch 1370892	111	106
1203046322	CAWA-14-54752MS	91	91
344112006	CAAN-14-54789	99	81

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

Page 1 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1370892

Matrix: WATER

Lab Sample ID 1203046321

Instrument: ECD6A.I

Analysis Date: 03/13/2014 23:36

Dilution: 1

Analyst: RXE1

Prep Batch ID:1370892

Inj. Vol: 1 uL

Batch ID: 1370893

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	1.94	97	55-113

Herbicide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-2944

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1370892

Matrix: WATER

Lab Sample ID 1203046324

Instrument: ECD6A.I

Analysis Date: 03/14/2014 00:04

Dilution: 1

Analyst: RXE1

Prep Batch ID:1370892

Inj. Vol: 1 uL

Batch ID: 1370893

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	1.91	95	55-113	2	0-30

Herbicide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-2944

Sample Type: Matrix Spike

Client ID: CAWA-14-54752MS

Matrix: W

Lab Sample ID 1203046322

Instrument: ECD6A.I

Analysis Date: 03/14/2014 02:37

Dilution: 1

Analyst: RXE1

Prep Batch ID:1370892

Inj. Vol: 1 uL

Batch ID: 1370893

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS Pentachlorophenol	2.06	0.00	U	1.61	78	37-114

Method Blank Summary

Page 1 of 1

SDG Number:	2014-2944	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1370892	Instrument ID:	ECD6A.I_1	Data File:	031314\E6c1312.D
Lab Sample ID:	1203046320		ECD6A.I_2		031314\E6c1312.D
Column:	CLP	Prep Date:	03/10/2014 10:00	Analyzed:	03/13/14 23:09
	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 1370892	1203046321	031314\E6c1313.D 031314\E6c1313.D	03/13/14	2336
02 LCSD for batch 1370892	1203046324	031314\E6c1314.D 031314\E6c1314.D	03/14/14	0004
03 CAWA-14-54752MS	1203046322	031314\E6c1320.D 031314\E6c1320.D	03/14/14	0237
04 CAAN-14-54789	344112006	031314\E6c1324.D 031314\E6c1324.D	03/14/14	0426

Quality Control Data

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-2944
Lab Sample ID: 1203046320
Client Sample: QC for batch 1370892
Client ID: MB for batch 1370892
Batch ID: 1370893
Run Date: 03/13/2014 23:09
Prep Date: 03/10/2014 10:00
Data File: 031314\E6c1312.D
031314\E6c1312.D

Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 1000 mL
Column: 1 CLP
2 CLP2

Matrix: WATER
Project: QC
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	0.250	ug/L	0.050	0.250	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.63	5.00	ug/L	92.7	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number: 2014-2944
Lab Sample ID: 1203046321
Client Sample: QC for batch 1370892
Client ID: LCS for batch 1370892
Batch ID: 1370893
Run Date: 03/13/2014 23:36
Prep Date: 03/10/2014 10:00
Data File: 031314\E6c1313.D
031314\E6c1313.D

Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 1000 mL
Column: 1 CLP
2 CLP2

Matrix: WATER
Project: QC
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		1.94	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.54	5.00	111	(43%-137%)

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-2944	Date Collected:	03/03/2014 12:08	Matrix:	W
Lab Sample ID:	1203046322	Date Received:	03/05/2014 09:00		
Client Sample:	QC for batch 1370892	Client:	ARSL004	Project:	QC
Client ID:	CAWA-14-54752MS	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1370893	Inst:	ECD6A.I	Dilution:	1
Run Date:	03/14/2014 02:37	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	03/10/2014 10:00	Aliquot:	970 mL	Final Volume:	10 mL
Data File:	031314\E6c1320.D	Column:	1 CLP		
	031314\E6c1320.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.61	ug/L	0.0515	0.258	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.71	5.15	ug/L	91.4	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-2944

Lab Sample ID: 1203046324

Client Sample: QC for batch 1370892

Client ID: LCSD for batch 1370892

Batch ID: 1370893

Run Date: 03/14/2014 00:04

Prep Date: 03/10/2014 10:00

Data File: 031314\E6c1314.D
031314\E6c1314.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-011

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 10 mL

Client: ARSL004
Method: SW846 8151A
Inst: ECD6A.I
Analyst: RXE1
Aliquot: 1000 mL
Column: 1 CLP
2 CLP2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.91	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.53	5.00	111	(43%-137%)

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International, LLC (ARSL)
SDG 2014-2944**

Sample Analysis

Sample ID	Client ID
344112004	CAAN-14-54789
344112007	CAAN-14-54791
1203047080	Method Blank (MB) ICP
1203047081	Laboratory Control Sample (LCS)
1203047085	344170001(WST22-14-56560L) Serial Dilution (SD)
1203047082	344170001(WST22-14-56560D) Sample Duplicate (DUP)
1203047083	344170001(WST22-14-56560S) Matrix Spike (MS)
1203047070	Method Blank (MB) ICP-MS
1203047071	Laboratory Control Sample (LCS)
1203047074	344170001(WST22-14-56560L) Serial Dilution (SD)
1203047072	344170001(WST22-14-56560D) Sample Duplicate (DUP)
1203047073	344170001(WST22-14-56560S) Matrix Spike (MS)
1203055607	Method Blank (MB) CVAA
1203055608	Laboratory Control Sample (LCS)
1203055611	344170001(WST22-14-56560L) Serial Dilution (SD)
1203055609	344170001(WST22-14-56560D) Sample Duplicate (DUP)
1203055610	344170001(WST22-14-56560S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1371203, 1371200, 1374901 and 1375893
Prep Batch :	1371201, 1371199 and 1374898
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 27 and GL-GC-E-107 REV# 9
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.1/245.2 and SM 2340 B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

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

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 6100E 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 9000 inductively coupled plasma mass spectrometer (ICP-MS). The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/- 7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

The Metals analysis-Mercury was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-100) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 253.7 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 80 mL/min.

Calibration Information

Instrument Calibration

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

CRDL Requirements

The CRDL standard recoveries met the referenced advisory control limits.

ICSA/ICSAB Statement

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

Continuing Calibration Blank (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

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

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 344170001 (WST22-14-56560)-ICP, ICP-MS and 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 elements 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 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. The samples in this SDG did not require dilutions.

Preparation Information

The samples in this SDG were prepared exactly according to the cited SOP.

Miscellaneous Information

Electronic Packaging Comment

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

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

Data Exception (DER) Documentation

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

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

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

Certification Statement

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

Review Validation:

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

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

Reviewer: Pat Steile Date: 04-01-2014

Sample Data Summary

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112

The Qualifiers in this report are defined as follows:

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

J Value is estimated

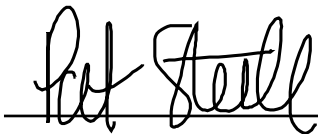
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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



04-01-2014

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-2944**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 344112004**BASIS:** As Received**DATE COLLECTED** 05-MAR-14**CLIENT ID:** CAAN-14-54789**LEVEL:** Low**DATE RECEIVED** 07-MAR-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	03/25/14 10:46	032514W1-5	1374901

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1374901	1374898	EPA 245.1/245.2 Prep	20	mL	20	mL	03/24/14	AXS5

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-2944**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 344112007**BASIS:** As Received**DATE COLLECTED** 05-MAR-14**CLIENT ID:** CAAN-14-54791**LEVEL:** Low**DATE RECEIVED** 07-MAR-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	03/25/14 10:48	032514W1-5	1374901

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-2944

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 344112007

BASIS: As Received

DATE COLLECTED 05-MAR-14

CLIENT ID: CAAN-14-54791

LEVEL: Low

DATE RECEIVED 07-MAR-14

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	03/27/14 11:38	140327-3	1371200
7440-38-2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	03/25/14 12:58	140325-2	1371200
7440-39-3	Barium	13.6	ug/L		1	5	5	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-70-2	Calcium	9340	ug/L		50	200	200	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-47-3	Chromium	3.22	ug/L	J	2	10	10	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	03/21/14 13:41	032114-1	1371203
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	03/21/14 13:41	032114-1	1371203
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7439-95-4	Magnesium	2930	ug/L		110	300	300	1	P	HSC	03/21/14 13:41	032114-1	1371203
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	03/21/14 13:41	032114-1	1371203
7439-98-7	Molybdenum	1.16	ug/L		0.165	0.5	0.5	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-02-0	Nickel	2	ug/L	U	0.5	2	2	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-09-7	Potassium	1170	ug/L		50	150	150	1	P	HSC	03/21/14 13:41	032114-1	1371203
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7631-86-9	Silica	65200	ug/L		53	213	213	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-23-5	Sodium	10800	ug/L		100	300	300	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-24-6	Strontium	48.1	ug/L		1	5	5	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-61-1	Uranium	0.501	ug/L		0.067	0.2	0.2	1	MS	SKJ	03/22/14 05:01	140321-4	1371200
7440-62-2	Vanadium	5.84	ug/L		1	5	5	1	P	HSC	03/21/14 13:41	032114-1	1371203
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	03/21/14 13:41	032114-1	1371203

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-2944**CONTRACT:** ESHL00714**METHOD TYPE:**

SAMPLE ID: 344112007 **BASIS:** As Received **DATE COLLECTED** 05-MAR-14
CLIENT ID: CAAN-14-54791 **LEVEL:** Low **DATE RECEIVED** 07-MAR-14
MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	35.4	mg/L		0.453	1.24	1.24	1		JJ2	03/27/14 14:18		1375893

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1371200	1371199	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1371203	1371201	SW846 3005A	50	mL	50	mL	03/19/14	AXG2
1374901	1374898	EPA 245.1/245.2 Prep	20	mL	20	mL	03/24/14	AXS5

***Analytical Methods:**

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

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2014-2944

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>
1203047070	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
	Molybdenum	0.165	ug/L	+/-0.5	U	MS	0.165	0.5
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Chromium	2	ug/L	+/-10	U	MS	2	10
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
1203047080	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	60.2	ug/L	+/-100	J	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	100	ug/L	+/-300	U	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Barium	1	ug/L	+/-5	U	P	1	5
	Aluminum	68	ug/L	+/-200	U	P	68	200
1203055607	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2

*Analytical Methods:

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

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-2944 Client ID: WST22-14-56560S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 344170001 Spike ID: 1203047073

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	59.3		1	U	50	117		MS
Arsenic	ug/L	75-125	58.9		1.7	U	50	118		MS
Cadmium	ug/L	75-125	49.9		0.175	J	50	99.4		MS
Chromium	ug/L	75-125	52		2.56	J	50	99		MS
Lead	ug/L	75-125	48.1		0.5	U	50	95.3		MS
Molybdenum	ug/L	75-125	49.7		0.618		50	98.1		MS
Nickel	ug/L	75-125	49.6		0.77	J	50	97.6		MS
Selenium	ug/L	75-125	50.4		1.5	U	50	100		MS
Silver	ug/L	75-125	49.1		0.2	U	50	98.1		MS
Thallium	ug/L	75-125	45.3		0.45	U	50	90.5		MS
Uranium	ug/L	75-125	51.4		0.1	J	50	103		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-2944 Client ID: WST22-14-56560S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 344170001 Spike ID: 1203047083

<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>
Manganese	ug/L	75-125	483		3.36	J	500	95.9		P
Potassium	ug/L	75-125	9590		4650		5000	99		P
Silica	ug/L	75-125	27300		17700		10700	89.3		P
Sodium	ug/L	75-125	19300		14900		5000	88		P
Strontium	ug/L	75-125	561		62.3		500	99.8		P
Tin	ug/L	75-125	467		2.5	U	500	93.4		P
Vanadium	ug/L	75-125	505		2.18	J	500	101		P
Zinc	ug/L	75-125	480		14.5		500	93.2		P
Aluminum	ug/L	75-125	5210		383		5000	96.5		P
Barium	ug/L	75-125	499		11.5		500	97.5		P
Beryllium	ug/L	75-125	482		1	U	500	96.5		P
Boron	ug/L	75-125	469		15.6	J	500	90.7		P
Calcium	ug/L	75-125	19000		15100		5000	78.2		P
Cobalt	ug/L	75-125	472		1	U	500	94.2		P
Copper	ug/L	75-125	505		3.35	J	500	100		P
Iron	ug/L	75-125	4800		57.5	J	5000	94.8		P
Magnesium	ug/L	75-125	7060		2480		5000	91.6		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Matrix Spike Summary

SDG NO. 2014-2944

Client ID: WST22-14-56560S

Contract: ESHL00114

Level: Low

Matrix: WATER

% Solids:

Sample ID: 344170001

Spike ID: 1203055610

<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	2.02		0.067	U	2	101		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 2014-2944

Lab Code: GEL

Contract: ESHL00714

Client ID: WST22-14-56560D

Matrix: WATER

Level: Low

Sample ID: 344170001

Duplicate ID: 1203047072

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	+/-1	0.175 J		0.176 J		.57		MS
Chromium	ug/L	+/-10	2.56 J		2.46 J		4.14		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	0.618		0.61		1.3		MS
Nickel	ug/L	+/-2	0.77 J		0.735 J		4.65		MS
Selenium	ug/L		1.5 U		1.5 U				MS
Silver	ug/L		0.2 U		0.2 U				MS
Thallium	ug/L		0.45 U		0.45 U				MS
Uranium	ug/L	+/- .2	0.1 J		0.1 J		0		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2014-2944

Lab Code: GEL

Contract: ESHL00714

Client ID: WST22-14-56560D

Matrix: WATER

Level: Low

Sample ID: 344170001

Duplicate ID: 1203047082

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L	+/-200	383		349		9.43		P
Barium	ug/L	+/-5	11.5		10.5		9.42		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15.6 J		15 U		200		P
Calcium	ug/L	+/-20%	15100		14600		3.38		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3.35 J		3 U		200		P
Iron	ug/L	+/-100	57.5 J		41.9 J		31.3		P
Magnesium	ug/L	+/-20%	2480		2370		4.16		P
Manganese	ug/L	+/-10	3.36 J		2.45 J		31.5		P
Potassium	ug/L	+/-20%	4650		4590		1.23		P
Silica	ug/L	+/-20%	17700		17000		3.9		P
Sodium	ug/L	+/-20%	14900		14400		3.28		P
Strontium	ug/L	+/-20%	62.3		60.4		3.1		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	2.18 J		2.19 J		.677		P
Zinc	ug/L	+/-10	14.5		13.7		5.49		P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2014-2944**Lab Code:** GEL**Contract:** ESHL00714**Client ID:** WST22-14-56560D**Matrix:** WATER**Level:** Low**Sample ID:** 344170001**Duplicate ID:** 1203055609**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. 2014-2944

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>
1203047071								
	Antimony	ug/L	50	56		112	80-120	MS
	Arsenic	ug/L	50	53.1		106	80-120	MS
	Cadmium	ug/L	50	49.4		98.8	80-120	MS
	Chromium	ug/L	50	49.8		99.6	80-120	MS
	Lead	ug/L	50	47.6		95.3	80-120	MS
	Molybdenum	ug/L	50	48.6		97.1	80-120	MS
	Nickel	ug/L	50	49.9		99.9	80-120	MS
	Selenium	ug/L	50	48.8		97.6	80-120	MS
	Silver	ug/L	50	49.1		98.2	80-120	MS
	Thallium	ug/L	50	44.6		89.2	80-120	MS
	Uranium	ug/L	50	50.5		101	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-2944

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>
1203047081								
	Barium	ug/L	500	499		99.9	80-120	P
	Beryllium	ug/L	500	494		98.8	80-120	P
	Boron	ug/L	500	461		92.2	80-120	P
	Calcium	ug/L	5000	4810		96.2	80-120	P
	Cobalt	ug/L	500	486		97.2	80-120	P
	Copper	ug/L	500	498		99.7	80-120	P
	Iron	ug/L	5000	4950		99	80-120	P
	Magnesium	ug/L	5000	5000		99.9	80-120	P
	Manganese	ug/L	500	495		98.9	80-120	P
	Potassium	ug/L	5000	5260		105	80-120	P
	Silica	ug/L	10700	9950		93	80-120	P
	Sodium	ug/L	5000	5130		103	80-120	P
	Strontium	ug/L	500	519		104	80-120	P
	Tin	ug/L	500	482		96.5	80-120	P
	Vanadium	ug/L	500	510		102	80-120	P
	Zinc	ug/L	500	478		95.6	80-120	P
	Aluminum	ug/L	5000	5040		101	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-2944

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>
1203055608	Mercury	ug/L	2	2.04		102	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-2944

Client ID: WST22-14-56560L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 344170001

Serial Dilution ID: 1203047074

<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	.175	J	.55	U	100			MS
Chromium	2.56	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	.618		.995	J	61			MS
Nickel	.77	J	2.5	U	100			MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.1	J	.335	U	100			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-2944

Client ID: WST22-14-56560L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 344170001

Serial Dilution ID: 1203047085

<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	383		340	U	100			P
Barium	11.5		12	J	4.18			P
Beryllium	1	U	5	U				P
Boron	15.6	J	75	U	100			P
Calcium	15100		14800		1.66		10	P
Cobalt	1	U	5	U				P
Copper	3.35	J	15	U	100			P
Iron	57.5	J	150	U	100			P
Magnesium	2480		2460		.606			P
Manganese	3.36	J	10	U	100			P
Potassium	4650		4360		6.04		10	P
Silica	17700		17100		3.38		10	P
Sodium	14900		14700		1.43		10	P
Strontium	62.3		60.7		2.51		10	P
Tin	2.5	U	12.5	U				P
Vanadium	2.18	J	5	U	100			P
Zinc	14.5		16.5	U	100			P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-2944 **Client ID:** WST22-14-56560L**Contract:** ESHL00714**Matrix:** LIQUID **Level:** Low**Sample ID:** 344170001 **Serial Dilution ID:** 1203055611

<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 2014-2944**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1371704

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
344112004	CAAN-14-54789
1203048255	Method Blank (MB)
1203048256	344112004(CAAN-14-54789) Sample Duplicate (DUP)
1203048258	344112004(CAAN-14-54789) Post Spike (PS)
1203048260	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-093 REV# 12.

Preparation/Analytical Method Verification

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

Calibration Information

The Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 344112004 (CAAN-14-54789).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Specific Conductivity

Analytical Batch: 1374269

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
344112007	CAAN-14-54791
1203054269	Laboratory Control Sample (LCS)
1203054270	344296007(CAWA-14-54762) Sample Duplicate (DUP)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

The Conductivity analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 344296007 (CAWA-14-54762).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: pH

Analytical Batch: 1372322 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
344112007	CAAN-14-54791
1203049842	Laboratory Control Sample (LCS)
1203049844	343999007(CAWA-14-54759) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-008 REV# 21.

Preparation/Analytical Method Verification

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

Calibration Information

The Electrode analysis was performed on a Thermo Orion Star A111. Immediates

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information (CCV)

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 343999007 (CAWA-14-54759).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

The following sample from this sample group was received by the lab outside of the method specified holding time: 344112007 (CAAN-14-54791).

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1274447 344112007 (CAAN-14-54791).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1371453	Method:	WSP-CN(T)
Prep Batch :	1371452	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
344112004	CAAN-14-54789
1203047735	Method Blank (MB)
1203047737	344112004(CAAN-14-54789) Sample Duplicate (DUP)
1203047741	344112004(CAAN-14-54789) Matrix Spike (MS)
1203047744	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-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 sample was selected for QC analysis: 344112004 (CAAN-14-54789).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product: Ion Chromatography

Analytical Batch: 1370700

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
344112007	CAAN-14-54791
1203045863	Method Blank (MB)
1203045864	344000007(CAWA-14-54773) Sample Duplicate (DUP)
1203045865	344000007(CAWA-14-54773) Post Spike (PS)
1203045866	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 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: 344000007 (CAWA-14-54773).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Manual Integrations

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1203045864 (CAWA-14-54773), 1203045865 (CAWA-14-54773) and 344112007 (CAAN-14-54791).

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: 1371472 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1371471 **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
344112007	CAAN-14-54791
1203047774	Method Blank (MB)
1203047776	344061007(CAWA-14-54772) Sample Duplicate (DUP)
1203047778	344061007(CAWA-14-54772) Matrix Spike (MS)
1203047779	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 9.

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8000 Series.

Initial Calibration

All initial calibration requirements have been met for this SDG.

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: 344061007 (CAWA-14-54772).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1370749	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1370748	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
344112004	CAAN-14-54789
1203045942	Method Blank (MB)
1203045943	Laboratory Control Sample (LCS)
1203045944	344000011(CAWA-14-54709) Sample Duplicate (DUP)
1203045945	344000011(CAWA-14-54709) Matrix Spike (MS)
1203046787	344068002(SWWS46-14-55783) Sample Duplicate (DUP)
1203046788	344068002(SWWS46-14-55783) 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 samples were selected for QC analysis: 344000011 (CAWA-14-54709) and 344068002 (SWWS46-14-55783).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203046788 (SWWS46-14-55783). The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203045945 (CAWA-14-54709).

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. 1203045942 (MB) and 1203045943 (LCS). The following samples were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported. 1203046788 (SWWS46-14-55783) and 344112004 (CAAN-14-54789).

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1273697 1203045945 (CAWA-14-54709) and 1203046788 (SWWS46-14-55783).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1372110

Method: EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
344112007	CAAN-14-54791
1203049254	Method Blank (MB)
1203049256	344227007(CAWA-14-54753) Sample Duplicate (DUP)
1203049258	344227007(CAWA-14-54753) Post Spike (PS)
1203049259	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-128 REV# 8.

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8500 Series.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 344227007 (CAWA-14-54753).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples in this sample group were diluted due to matrix interference: 1203049256 (CAWA-14-54753) and 1203049258 (CAWA-14-54753).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1370747	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1370746	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
344112007	CAAN-14-54791
1203045937	Method Blank (MB)
1203045938	Laboratory Control Sample (LCS)
1203045939	344000011(CAWA-14-54709) Sample Duplicate (DUP)
1203045940	344000011(CAWA-14-54709) Matrix Spike (MS)
1203046785	344061007(CAWA-14-54772) Sample Duplicate (DUP)
1203046786	344061007(CAWA-14-54772) 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: 344000011 (CAWA-14-54709) and 344061007 (CAWA-14-54772).

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 sample was re-analyzed due to (its) proximity to an overrange sample. The results from the reanalysis are reported. 344112007 (CAAN-14-54791).

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an

effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

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

Method/Analysis Information

Product: Solids and Total Dissolved

Analytical Batch: 1371765

Method: EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
344112007	CAAN-14-54791
1203048354	Method Blank (MB)
1203048355	344112007(CAAN-14-54791) Sample Duplicate (DUP)
1203048356	Laboratory Control Sample (LCS)
1203048572	344296020(CAWA-14-54707) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 14.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 344112007 (CAAN-14-54791) and 344296020 (CAWA-14-54707).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Sample Aliquot

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Alkalinity

Analytical Batch: 1372687 **Method:** EPA 310.1 Total Alkalinity

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 310.1:

Sample ID	Client ID
344112007	CAAN-14-54791
1203050681	Method Blank (MB)
1203050682	Laboratory Control Sample (LCS)
1203051077	344112007(CAAN-14-54791) Sample Duplicate (DUP)
1203051078	344112007(CAAN-14-54791) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-033 REV# 11.

Preparation/Analytical Method Verification

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

Calibration Information

The Titration analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 344112007 (CAAN-14-54791).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement

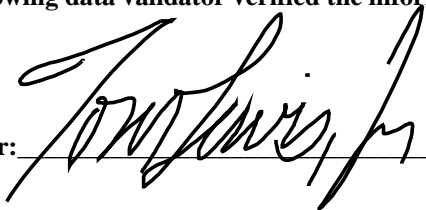
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

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

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

Reviewer:



Date:

03 April 14

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112

The Qualifiers in this report are defined as follows:

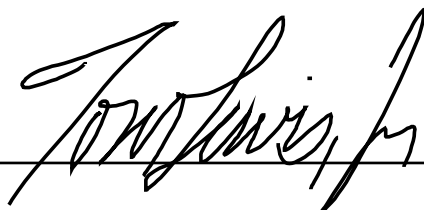
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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

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

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

Reviewed by



GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: April 2, 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: 2014-2944

Client Sample ID: CAAN-14-54789
Sample ID: 344112004
Matrix: W
Collect Date: 05-MAR-14 11:32
Receive Date: 07-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.701	0.330	1.00	mg/L	1	TSM	03/13/14	1659	1371704	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	03/11/14	1019	1371453	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	03/11/14	1704	1370749	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	03/11/14	0928	1371452
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	03/10/14	1800	1370748

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: April 2, 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: 2014-2944

Client Sample ID: CAAN-14-54791
Sample ID: 344112007
Matrix: W
Collect Date: 05-MAR-14 11:32
Receive Date: 07-MAR-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		119	1.00	1.00	umhos/cm	1	LXA1	03/20/14	1616	1374269	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 16.6C	H	8.15	0.010	0.100	SU	1	LXA1	03/13/14	1438	1372322	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	DM	03/12/14	0420	1370700	3
Chloride		1.63	0.067	0.200	mg/L	1					
Fluoride		0.190	0.033	0.100	mg/L	1					
Sulfate		1.51	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	03/13/14	1119	1371472	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.310	0.017	0.050	mg/L	1	KLP1	03/13/14	1444	1372110	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0893	0.017	0.050	mg/L	1	KLP1	03/11/14	1452	1370747	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		119	3.40	14.3	mg/L		LYG1	03/11/14	0849	1371765	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		54.3	0.725	1.00	mg/L		LXA1	03/14/14	1139	1372687	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	03/13/14	0932	1371471
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	03/10/14	1700	1370746

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Certificate of Analysis

Report Date: April 2, 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: 2014-2944

Client Sample ID: CAAN-14-54791
Sample ID: 344112007

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: April 2, 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: 344112

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1371704										
QC1203048256	344112004	DUP									
Total Organic Carbon Average	J	0.701	J	0.784	mg/L	11.2	^	(+/-1.00)	TSM	03/13/14	17:32
QC1203048260	LCS										
Total Organic Carbon Average	10.0			9.72	mg/L			(85%-115%)		03/13/14	12:42
QC1203048255	MB										
Total Organic Carbon Average			U	ND	mg/L					03/13/14	12:33
QC1203048258	344112004	PS									
Total Organic Carbon Average	10.0	J	0.701	10.4	mg/L			(65%-120%)		03/13/14	17:52
Conductivity Analysis											
Batch	1374269										
QC1203054270	344296007	DUP									
Conductivity		113		114	umhos/cm	0.883		(0%-10%)	LXA1	03/20/14	16:23
QC1203054269	LCS										
Conductivity	1410			1410	umhos/cm			(95%-105%)		03/20/14	16:15
Electrode Analysis											
Batch	1372322										
QC1203049844	343999007	DUP									
pH	H	7.85	H	7.83	SU	0.255		(0%-10%)	LXA1	03/13/14	14:21
QC1203049842	LCS										
pH	7.00			7.02	SU			(99%-101%)		03/13/14	14:09
Flow Injection Analysis											
Batch	1371453										
QC1203047737	344112004	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	03/11/14	10:20
QC1203047744	LCS										
Cyanide, Total	50.0			50.1	ug/L			(90%-110%)		03/11/14	10:06
QC1203047735	MB										
Cyanide, Total			U	ND	ug/L					03/11/14	10:05
QC1203047741	344112004	MS									
Cyanide, Total	100	U	ND	104	ug/L			(90%-110%)		03/11/14	10:21

Ion Chromatography

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QC Summary

Workorder: 344112

Page 2 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1370700										
QC1203045864	344000007	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		DM	03/12/14	01:43
Chloride			1.14		1.13	mg/L	0.361	(0%-20%)			
Fluoride		J	0.070	J	0.0636	mg/L	9.58 ^	(+/-0.100)			
Sulfate			2.19		2.19	mg/L	0.0228	(0%-20%)			
QC1203045866	LCS										
Bromide	1.25				1.31	mg/L	104	(90%-110%)		03/12/14	00:09
Chloride	5.00				4.76	mg/L	95.2	(90%-110%)			
Fluoride	2.50				2.40	mg/L	95.9	(90%-110%)			
Sulfate	10.0				10.0	mg/L	100	(90%-110%)			
QC1203045863	MB										
Bromide			U		ND	mg/L				03/11/14	23:37
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					
QC1203045865	344000007	PS									
Bromide	1.25	U	ND		1.26	mg/L	101	(90%-110%)		03/12/14	02:14
Chloride	5.00		1.14		5.98	mg/L	96.7	(90%-110%)			
Fluoride	2.50	J	0.070		2.44	mg/L	94.9	(90%-110%)			
Sulfate	10.0		2.19		12.4	mg/L	102	(90%-110%)			
Nutrient Analysis											
Batch	1370747										
QC1203045939	344000011	DUP									
Phosphorus, Total as P		J	0.0364	J	0.0328	mg/L	10.4 ^	(+/-0.050)	KLP1	03/11/14	14:30
QC1203046785	344061007	DUP									
Phosphorus, Total as P		J	0.0492	J	0.0438	mg/L	11.6 ^	(+/-0.050)		03/11/14	14:39
QC1203045938	LCS										
Phosphorus, Total as P	1.00				0.944	mg/L	94.4	(79%-126%)		03/11/14	14:26

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QC Summary

Workorder: 344112

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1370747										
QC1203045937	MB										
Phosphorus, Total as P			J	0.0465	mg/L				KLP1	03/11/14	14:25
QC1203045940	344000011	MS									
Phosphorus, Total as P	1.00	J	0.0364	0.938	mg/L		90.2	(64%-134%)		03/11/14	14:31
QC1203046786	344061007	MS									
Phosphorus, Total as P	1.00	J	0.0492	0.983	mg/L		93.4	(64%-134%)		03/11/14	14:40
Batch	1370749										
QC1203045944	344000011	DUP									
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	03/11/14	16:15
QC1203046787	344068002	DUP									
Nitrogen, Total Kjeldahl			1.29	1.22	mg/L	5.58		(0%-20%)		03/11/14	16:28
QC1203045943	LCS										
Nitrogen, Total Kjeldahl	1.00			1.06	mg/L		106	(90%-110%)		03/11/14	16:21
QC1203045942	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					03/11/14	16:20
QC1203045945	344000011	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	1.11	mg/L		111 *	(90%-110%)		03/11/14	16:16
QC1203046788	344068002	MS									
Nitrogen, Total Kjeldahl	1.00		1.29	1.88	mg/L		59 *	(90%-110%)		03/11/14	17:04
Batch	1371472										
QC1203047776	344061007	DUP									
Nitrogen, Ammonia		J	0.0454	J	0.0407	mg/L	10.9 ^	(+/-0.050)	KLP1	03/13/14	11:17
QC1203047779	LCS										
Nitrogen, Ammonia	1.00			1.03	mg/L		103	(90%-110%)		03/13/14	11:15
QC1203047774	MB										
Nitrogen, Ammonia			U	ND	mg/L					03/13/14	11:15
QC1203047778	344061007	MS									
Nitrogen, Ammonia	1.00	J	0.0454	1.04	mg/L		99.5	(90%-110%)		03/13/14	11:18
Batch	1372110										
QC1203049256	344227007	DUP									
Nitrogen, Nitrate/Nitrite			0.855	0.825	mg/L	3.57 ^		(+/-0.250)	KLP1	03/13/14	14:52
QC1203049259	LCS										

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QC Summary

Workorder: 344112

Page 4 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1372110										
Nitrogen, Nitrate/Nitrite	1.00			1.05	mg/L		105	(90%-110%)	KLP1	03/13/14	14:36
QC1203049254 MB											
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					03/13/14	14:35
QC1203049258 344227007 PS											
Nitrogen, Nitrate/Nitrite	1.00	0.171		1.21	mg/L		104	(90%-110%)		03/13/14	14:53
Solids Analysis											
Batch	1371765										
QC1203048355 344112007 DUP											
Total Dissolved Solids		119		119	mg/L	0.00		(0%-10%)	LYG1	03/11/14	08:49
QC1203048572 344296020 DUP											
Total Dissolved Solids		119		120	mg/L	1.20		(0%-10%)		03/11/14	13:23
QC1203048356 LCS											
Total Dissolved Solids	300			287	mg/L		95.7	(95%-105%)		03/11/14	08:49
QC1203048354 MB											
Total Dissolved Solids			U	ND	mg/L					03/11/14	08:49
Titration Analysis											
Batch	1372687										
QC1203051077 344112007 DUP											
Alkalinity, Total as CaCO3		54.3		53.8	mg/L	0.957		(0%-20%)	LXA1	03/14/14	11:43
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1203050682 LCS											
Alkalinity, Total as CaCO3	50.0			50.7	mg/L		101	(90%-110%)		03/14/14	11:09
QC1203050681 MB											
Alkalinity, Total as CaCO3			U	ND	mg/L					03/14/14	10:57
Carbonate alkalinity (CaCO3)			U	ND	mg/L						
QC1203051078 344112007 MS											
Alkalinity, Total as CaCO3	50.0	54.3		105	mg/L		100	(80%-120%)		03/14/14	11:52

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.

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QC Summary

Workorder: 344112

Page 5 of 5

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
E	General Chemistry--Concentration of the target analyte exceeds the instrument calibration range										
H	Analytical holding time was exceeded										
J	Value is estimated										
N/A	RPD or %Recovery limits do not apply.										
N1	See case narrative										
ND	Analyte concentration is not detected above the detection limit										
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Z	Paint Filter Test--Particulates passed through the filter, however no free liquids were observed.										
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.										
d	5-day BOD--The 2:1 depletion requirement was not met for this sample										
e	5-day BOD--Test replicates show more than 30% difference between high and low values. The data is qualified per the method and can be used for reporting purposes										
h	Preparation or preservation holding time was exceeded										

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 12-MAR-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2, EPA 351.2 SC	Matrix Type: Liquid	Client Code: AECM, CBMW, ESHL, STOL
Batch ID: 1370749	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 343959(14025963),343999(2014-2932),344000(2014-2933),344029,344031,344043,344061(2014-2938),344063(2014-2936),344068(2014-2937),344112(2014-2944) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS: QC 1203045947MS QC 1203046788MS 2. Failed Recovery for MS: QC 1203045945MS		1. The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203045947 and 1203046788 2.The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203045945	

Originator's Name:

Kristen Parson 12-MAR-14

Data Validator/Group Leader:

Elzbieta Szulc 12-MAR-14

DATA EXCEPTION REPORT

Mo.Day Yr. 13-MAR-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1, SW846 9040C	Matrix Type: Liquid	Client Code: CARE, ESHL, FBWP, SCEG,
Batch ID: 1372322	Sample Numbers: See Below		
<p>Potentially affected work order(s)(SDG): 343999(2014-2932),344000(2014-2933),344061(2014-2938),344063(2014-2936),344112(2014-2944),344170(2014-2954),344227(2014-2943),344290,344291(2014-2957),344293(2014-2958),344296(2014-2959),344332(2014-2960),344335,344379,344440(EUI-9553)</p> <p>Application Issues:</p> <p>Sample received out of holding</p>			
Specification and Requirements Exception Description:		DER Disposition:	
<p>1. Sample received out of holding:</p> <p>343999 007</p> <p>344000 007,011</p> <p>344061 007</p> <p>344063 007</p> <p>344112 007</p> <p>344170 001</p> <p>344227 007</p> <p>344290 002</p> <p>344291 007,016</p> <p>344293 007</p> <p>344296 007,020</p> <p>344332 007,016</p> <p>344335 004</p> <p>344379 006,012</p> <p>344440 001</p>		<p>1.The following samples from this sample group were received by the lab outside of the method specified holding time.</p>	

Originator's Name:

Lindsey Jensen 13-MAR-14

Data Validator/Group Leader:

Elzbieta Szulc 13-MAR-14

Radiological Analysis

**Radiochemistry Case Narrative
ARS International, LLC (ARSL)
SDG 2014-2944
Work Order 344112**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1371047

Sample ID	Client ID
344112004	CAAN-14-54789
1203046678	Method Blank (MB)
1203046679	344112004(CAAN-14-54789) Sample Duplicate (DUP)
1203046680	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203046678 (MB) and 1203046680 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 344112004 (CAAN-14-54789). The QC was from ARSL work order 344112.

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

Samples 1203046679 (CAAN-14-54789) and 344112004 (CAAN-14-54789) were recounted due to high MDCs. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. 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:	1371050

Sample ID	Client ID
344112004	CAAN-14-54789
1203046696	Method Blank (MB)
1203046697	344112004(CAAN-14-54789) 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# 24.

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203046696 (MB) and 1203046698 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 344112004 (CAAN-14-54789). The QC was from ARSL work order 344112.

QC Information

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

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

None of the samples in this batch were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1274681 was generated due to RDL less than MDA. 1. Samples 344112004, 1203046696, and 1203046697 did not meet the Pu-239/240

detection limit. 1. When a blank population is performed the MDA is greater than the RDL due to the high standard deviation. The samples were counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDCs. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

The MDCs (and Lc if requested) are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	Alphaspec U, Liquid
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1371056

Sample ID	Client ID
344112004	CAAN-14-54789
1203046699	Method Blank (MB)
1203046700	344112004(CAAN-14-54789) Sample Duplicate (DUP)
1203046701	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:**Blank Information**

Aliquots for samples 1203046699 (MB) and 1203046701 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 344112004 (CAAN-14-54789). The QC was from ARSL work order 344112.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

Recounts

None of the samples in this batch were recounted.

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

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

The MDCs (and Lc if requested) are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: **Gammaspec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1370818

Sample ID	Client ID
344112004	CAAN-14-54789
1203046142	Method Blank (MB)
1203046143	344000004(CAWA-14-54752) Sample Duplicate (DUP)
1203046144	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in May 2013, July 2013 and August 2013.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 344000004 (CAWA-14-54752). The QC was from ARSL work order 344000.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Recounts

None of the samples in this batch were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GFPC, Sr90, liquid
Analytical Method: EPA 905.0 Modified
Analytical Batch Number: 1374041

Sample ID	Client ID
344112004	CAAN-14-54789
1203053724	Method Blank (MB)
1203053725	344063004(CAPA-14-54777) Sample Duplicate (DUP)
1203053726	344063004(CAPA-14-54777) Matrix Spike (MS)
1203053727	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 17.

Calibration Information:

Calibration Information

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

March 2013.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:**Blank Information**

Aliquots for samples 1203053724 (MB) and 1203053727 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 344063004 (CAPA-14-54777). The QC was from ARSL work order 344063.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1203053724 (MB) result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Recounts

Sample 344112004 (CAAN-14-54789) was recounted due to a suspected false positive. The recount is reported.

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

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

Sample-Specific MDA/MDC

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

Additional Comments

The matrix spike, 1203053726 (CAPA-14-54777), aliquot was reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: WSP-GrossA/B
Analytical Method: EPA 900.0/SW846 9310
Analytical Batch Number: 1374043

Sample ID	Client ID
344112004	CAAN-14-54789
1203053744	Method Blank (MB)
1203053745	344296017(CAWA-14-54704) Sample Duplicate (DUP)
1203053746	344296017(CAWA-14-54704) Matrix Spike (MS)
1203053747	344296017(CAWA-14-54704) Matrix Spike Duplicate (MSD)
1203053748	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203053744 (MB) and 1203053748 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 344296017 (CAWA-14-54704). The QC was from ARSL work order 344296.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

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

Recounts

Sample 1203053748 (LCS) was recounted due to high recovery. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Sample-Specific MDA/MDC

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

Additional Comments

The matrix spike and matrix spike duplicate, 1203053746 (CAWA-14-54704) and 1203053747 (CAWA-14-54704), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

GEL LABORATORIES LLC

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Qualifier Definition Report for

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

Client SDG: 2014-2944 GEL Work Order: 344112

The Qualifiers in this report are defined as follows:

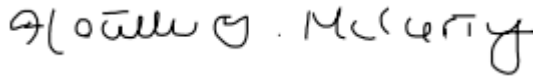
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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: Heather McCarty

Date: 01 APR 2014

Title: Analyst II

DATA EXCEPTION REPORT			
Mo.Day Yr. 14-MAR-14	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Pu-11-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1371050	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 344112(2014-2944) Application Issues: RDL less than MDA			
Specification and Requirements Exception Description:		DER Disposition:	
1. Samples 344112004, 1203046696, and 1203046697 did not meet the Pu-239/240 detection limit.		1. When a blank population is performed the MDA is greater than the RDL due to the high standard deviation. The samples were counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDCs. Reporting results.	

Originator's Name:

Melanie Aycock 14-MAR-14

Data Validator/Group Leader:

Heather McCarty 15-MAR-14

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: April 1, 2014

Client Sample ID: CAAN-14-54789
Sample ID: 344112004
Matrix: W
Collect Date: 05-MAR-14
Receive Date: 07-MAR-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	0.00853	+/-0.00603	0.0427	0.0185	+/-0.00604	0.050	pCi/L		JXR1	03/14/14	1359	1371047	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	-0.00299	+/-0.00518	0.0385	0.0152	+/-0.00518	0.050	pCi/L		JXR1	03/12/14	1145	1371050	2
Plutonium-239/240	U	-0.00598	+/-0.00598	0.0878	0.0398	+/-0.00598	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		0.318	+/-0.0301	0.0435	0.0182	+/-0.0364	1.00	pCi/L		JXR1	03/12/14	1144	1371056	3
Uranium-235/236	U	0.0162	+/-0.00859	0.0415	0.0164	+/-0.00865	1.00	pCi/L						
Uranium-238		0.152	+/-0.021	0.0407	0.0168	+/-0.0232	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammasesc "As Received"

Cesium-137	U	1.31	+/-1.48	5.84	2.62	+/-1.51	8.00	pCi/L		RXF2	03/13/14	1048	1370818	4
Cobalt-60	U	2.65	+/-1.28	6.07	2.60	+/-1.42	8.00	pCi/L						
Neptunium-237	U	-0.0315	+/-2.70	9.71	4.46	+/-2.70	10.0	pCi/L						
Potassium-40	U	35.7	+/-19.2	64.0	27.6	+/-19.3	10.0	pCi/L						
Sodium-22	U	0.565	+/-1.33	5.50	2.33	+/-1.34	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	0.357	+/-0.146	0.452	0.197	+/-0.149	0.500	pCi/L		KSD1	03/31/14	1117	1374041	5
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WSP-GrossA/B "As Received"

Beta	U	0.862	+/-0.601	1.99	0.972	+/-0.606	3.00	pCi/L		DXG3	03/28/14	1625	1374043	6
Alpha	U	-0.29	+/-0.418	1.99	0.767	+/-0.418	3.00	pCi/L		DXG3	03/31/14	1148	1374043	7

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1371047	79.3	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1371050	73.6	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1371056	86.5	(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: April 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAAN-14-54789

Project: ESHL00714

Sample ID: 344112004

Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test							Batch ID	Recovery%	Acceptable Limits				
Strontium Carrier		GFPC, Sr90, liquid "As Received"						1374041	76.8	(50%-105%)				

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: April 1, 2014

Page 1 of 6

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

Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 344112

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1371047										
QC1203046679	344112004	DUP									
Americium-241	U	0.00853	U	-0.00494	pCi/L	0.613		(0-1)	JXR1	03/14/1413:59	
	Uncert:	+/-0.00603		+/-0.00494							
	TPU:	+/-0.00604		+/-0.00494							
**Americium-243 Tracer	2.67	2.12		1.82	pCi/L		68.4	(50%-105%)			
	Uncert:	+/-0.0751		+/-0.0809							
	TPU:	+/-0.132		+/-0.138							
QC1203046680	LCS										
Americium-241	1.41			1.37	pCi/L		97	(80%-120%)	JXR1	03/12/1411:45	
	Uncert:			+/-0.0514							
	TPU:			+/-0.0769							
**Americium-243 Tracer	2.13			1.98	pCi/L		92.9	(50%-105%)			
	Uncert:			+/-0.0635							
	TPU:			+/-0.109							
QC1203046678	MB										
Americium-241			U	0.00	pCi/L				JXR1	03/12/1411:45	
	Uncert:			+/-0.00548							
	TPU:			+/-0.00548							
**Americium-243 Tracer	2.13			1.68	pCi/L		78.9	(50%-105%)			
	Uncert:			+/-0.0687							
	TPU:			+/-0.116							
Batch	1371050										
QC1203046697	344112004	DUP									
Plutonium-238	U	-0.00299	U	0.00332	pCi/L	0.289		(0-1)	JXR1	03/12/1411:45	
	Uncert:	+/-0.00518		+/-0.00575							
	TPU:	+/-0.00518		+/-0.00575							
Plutonium-239/240	U	-0.00598	U	0.00	pCi/L	0.212		(0-1)			
	Uncert:	+/-0.00598		+/-0.00813							
	TPU:	+/-0.00598		+/-0.00813							
**Plutonium-242 Tracer	2.43	1.79		1.65	pCi/L		67.8	(50%-105%)			
	Uncert:	+/-0.0855		+/-0.090							
	TPU:	+/-0.139		+/-0.145							
QC1203046698	LCS										
Plutonium-238			U	0.00423	pCi/L			(80%-120%)	JXR1	03/12/1411:45	
	Uncert:			+/-0.00518							
	TPU:			+/-0.00518							
Plutonium-239/240	1.97			1.94	pCi/L		98.4	(80%-120%)			
	Uncert:			+/-0.0644							
	TPU:			+/-0.106							
**Plutonium-242 Tracer	1.94			1.72	pCi/L		88.6	(50%-105%)			
	Uncert:			+/-0.0643							
	TPU:			+/-0.106							

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1371050										
QC1203046696	MB										
Plutonium-238			U	0.00641	pCi/L				JXR1	03/12/14	11:45
				Uncert: +/-0.00478							
				TPU: +/-0.00479							
Plutonium-239/240			U	0.00427	pCi/L						
				Uncert: +/-0.00676							
				TPU: +/-0.00676							
**Plutonium-242 Tracer	1.94			1.56	pCi/L		80.3	(50%-105%)			
				Uncert: +/-0.0647							
				TPU: +/-0.107							
Batch	1371056										
QC1203046700	344112004 DUP										
Uranium-234		0.318		0.348	pCi/L	0.205		(0-1)	JXR1	03/12/14	11:44
		Uncert: +/-0.0301		+/-0.030							
		TPU: +/-0.0364		+/-0.0373							
Uranium-235/236		U 0.0162	U	0.0119	pCi/L	0.134		(0-1)			
		Uncert: +/-0.00859		+/-0.00732							
		TPU: +/-0.00865		+/-0.00736							
Uranium-238		0.152		0.169	pCi/L	0.179		(0-1)			
		Uncert: +/-0.021		+/-0.0211							
		TPU: +/-0.0232		+/-0.0237							
**Uranium-232 Tracer	2.75	2.38		2.50	pCi/L		91	(50%-105%)			
		Uncert: +/-0.0853		+/-0.082							
		TPU: +/-0.197		+/-0.194							
QC1203046701	LCS										
Uranium-234				2.93	pCi/L				JXR1	03/12/14	11:45
		Uncert: +/-0.0897		+/-0.0897							
		TPU: +/-0.214		+/-0.214							
Uranium-235/236				0.115	pCi/L						
		Uncert: +/-0.0261		+/-0.0261							
		TPU: +/-0.0272		+/-0.0272							
Uranium-238	2.70			2.90	pCi/L		107	(80%-120%)			
		Uncert: +/-0.0889		+/-0.0889							
		TPU: +/-0.213		+/-0.213							
**Uranium-232 Tracer	2.20			1.45	pCi/L		65.7	(50%-105%)			
		Uncert: +/-0.0773		+/-0.0773							
		TPU: +/-0.165		+/-0.165							
QC1203046699	MB										
Uranium-234			U	-0.00202	pCi/L				JXR1	03/12/14	11:44
		Uncert: +/-0.0109		+/-0.0109							
		TPU: +/-0.0109		+/-0.0109							
Uranium-235/236			U	0.0025	pCi/L						
		Uncert: +/-0.00558		+/-0.00558							
		TPU: +/-0.00559		+/-0.00559							
Uranium-238			U	0.00404	pCi/L						
		Uncert: +/-0.00571		+/-0.00571							
		TPU: +/-0.00572		+/-0.00572							

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1371056										
**Uranium-232 Tracer											
	2.20			1.91	pCi/L		86.8	(50%-105%)			
	Uncert:			+/-0.0669							
	TPU:			+/-0.156							
Rad Gamma Spec											
Batch	1370818										
QC1203046143	344000004	DUP									
Cesium-137	U	-2.85	U	-0.213	pCi/L	0.396		(0-1)	RXF2	03/13/1410:50	
	Uncert:	+/-1.81		+/-1.41							
	TPU:	+/-1.92		+/-1.41							
Cobalt-60	U	-1.93	U	1.33	pCi/L	0.441		(0-1)			
	Uncert:	+/-1.99		+/-1.63							
	TPU:	+/-2.04		+/-1.66							
Neptunium-237	U	-2.2	U	-1.0	pCi/L	0.109		(0-1)			
	Uncert:	+/-2.61		+/-2.82							
	TPU:	+/-2.66		+/-2.83							
Potassium-40	U	-4.24	U	41.1	pCi/L	0.588		(0-1)			
	Uncert:	+/-17.5		+/-21.0							
	TPU:	+/-17.5		+/-21.1							
Sodium-22	U	0.355	U	0.877	pCi/L	0.0921		(0-1)			
	Uncert:	+/-1.52		+/-1.31							
	TPU:	+/-1.52		+/-1.32							
QC1203046144	LCS										
Americium-241	34500			35300	pCi/L		102	(80%-120%)	RXF2	03/12/1412:43	
	Uncert:			+/-589							
	TPU:			+/-2000							
Cesium-137	14200			14500	pCi/L		103	(80%-120%)			
	Uncert:			+/-163							
	TPU:			+/-640							
Cobalt-60	18300			18500	pCi/L		101	(80%-120%)			
	Uncert:			+/-206							
	TPU:			+/-781							
Neptunium-237			U	65.2	pCi/L						
	Uncert:			+/-78.9							
	TPU:			+/-80.3							
Potassium-40			U	-452	pCi/L						
	Uncert:			+/-189							
	TPU:			+/-217							
Sodium-22			U	45.3	pCi/L						
	Uncert:			+/-24.1							
	TPU:			+/-26.4							
QC1203046142	MB										
Cesium-137			U	3.01	pCi/L				RXF2	03/13/1410:49	
	Uncert:			+/-1.69							
	TPU:			+/-1.83							
Cobalt-60			U	0.573	pCi/L						
	Uncert:			+/-1.78							

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1370818										
Neptunium-237	TPU:			+/-1.78							
			U	-0.612	pCi/L						
	Uncert:			+/-3.44							
Potassium-40	TPU:			+/-3.44							
			U	-23.9	pCi/L						
	Uncert:			+/-20.2							
Sodium-22	TPU:			+/-21.0							
			U	-0.298	pCi/L						
	Uncert:			+/-1.27							
	TPU:			+/-1.27							
Rad Gas Flow											
Batch	1374041										
QC1203053725	344063004	DUP									
Strontium-90	U	-0.30	U	0.0798	pCi/L	0.896		(0-1)	KSD1	03/28/1415:04	
	Uncert:	+/-0.123		+/-0.0888							
	TPU:	+/-0.123		+/-0.089							
**Strontium Carrier	8.20	7.20		7.30	mg		89	(50%-105%)			
QC1203053727	LCS										
Strontium-90	22.7			26.1	pCi/L		115	(80%-120%)	KSD1	03/28/1408:52	
	Uncert:			+/-0.693							
	TPU:			+/-2.21							
**Strontium Carrier	8.20			7.30	mg		89	(50%-105%)			
QC1203053724	MB										
Strontium-90			U	0.096	pCi/L				KSD1	03/28/1415:04	
	Uncert:			+/-0.0463							
	TPU:			+/-0.0469							
**Strontium Carrier	8.20			6.80	mg		82.9	(50%-105%)			
QC1203053726	344063004	MS									
Strontium-90	182	U	-0.30	200	pCi/L		110	(75%-125%)	KSD1	03/28/1408:52	
	Uncert:		+/-0.123	+/-5.46							
	TPU:		+/-0.123	+/-17.3							
**Strontium Carrier	8.20	7.20		6.60	mg		80.5	(50%-105%)			
Batch	1374043										
QC1203053745	344296017	DUP									
Alpha	U	-0.474	U	-0.338	pCi/L	0.0659		(0-1)	DXG3	03/31/1411:49	
	Uncert:	+/-0.373		+/-0.653							
	TPU:	+/-0.374		+/-0.653							
Beta	U	-0.0466	U	1.18	pCi/L	0.763		(0-1)		03/28/1417:51	
	Uncert:	+/-0.309		+/-0.486							
	TPU:	+/-0.310		+/-0.497							
QC1203053748	LCS										
Alpha	12.3			12.9	pCi/L		104	(80%-120%)	DXG3	03/31/1415:35	
	Uncert:			+/-0.655							
	TPU:			+/-1.39							
Beta	45.5			52.1	pCi/L		115	(80%-120%)		03/28/1416:27	

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1374043										
		Uncert:		+/-0.939							
		TPU:		+/-4.41							
QC1203053744	MB										
Alpha			U	-0.165	pCi/L				DXG3	03/31/1411:48	
		Uncert:		+/-0.0458							
		TPU:		+/-0.0458							
Beta			U	0.00391	pCi/L					03/28/1416:25	
		Uncert:		+/-0.0514							
		TPU:		+/-0.0514							
QC1203053746	344296017	MS									
Alpha	494	U	-0.474	581	pCi/L		118	(75%-125%)	DXG3	03/31/1412:03	
		Uncert:	+/-0.373	+/-28.2							
		TPU:	+/-0.374	+/-56.0							
Beta	1820	U	-0.0466	2080	pCi/L		114	(75%-125%)		03/28/1416:27	
		Uncert:	+/-0.309	+/-37.6							
		TPU:	+/-0.310	+/-177							
QC1203053747	344296017	MSD									
Alpha	494	U	-0.474	528	pCi/L	0.244	107	(0-1)	DXG3	03/31/1412:03	
		Uncert:	+/-0.373	+/-26.9							
		TPU:	+/-0.374	+/-52.1							
Beta	1820	U	-0.0466	2180	pCi/L	0.134	120	(0-1)		03/28/1416:27	
		Uncert:	+/-0.309	+/-38.5							
		TPU:	+/-0.310	+/-185							

Notes:

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

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M 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.

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Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
R	Sample results are rejected									
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.									
UI	Gamma Spectroscopy--Uncertain identification									
UJ	Gamma Spectroscopy--Uncertain identification									
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.									
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.									
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.									
h	Preparation or preservation holding time was exceeded									

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

** Indicates analyte is a surrogate/tracer compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the 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.