

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo

SAMPLE ID: CAPU-14-79421 WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1245	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	DC
LOCATION ID: R-3		↓	FIELD PREP:	UF	OK
LOCATION TYPE:		↓	FIELD QC TYPE:	FTB	↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE:	QC	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	1	MS202 HCL	Y	NA
NA	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT)

W. Shaw / A. Vigil

RELINQUISHED BY (Printed Name) Maurice Shundo (Signature) <i>Maurice Shundo</i>	Date/Time 6/4/14 1330	RECEIVED BY (Printed Name) K. Grier (Signature) <i>K. Grier</i>	Date/Time 6/4/14 1130
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo

SAMPLE ID: CAPU-14-79422 WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		0909	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	
LOCATION ID: R-3i			FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	FTB	
PORT: SINGLE COMPLETION			SAMPLE USAGE:	QC	

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 6/4/14 1200	RECEIVED BY (Printed Name) (Signature)	Date/Time 6/4/14 12:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79429 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1245	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-3		↓	FIELD PREP:	UF	ok
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	y	NA
↓	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	Na2S2O3	↓	↓
↓	WSP-8310-PAH	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-GrossA/B	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-LL-8081A-HCB	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8151A-PCP	1 LITER AMBER GLASS	2	ICE	↓	↓
↓	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL	↓	↓
↓	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	↓	↓
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
Sampling Event_Pueblo
SAMPLE ID: CAPU-14-79429 WORK ORDER: NA

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

SAMPLE COMMENTS: generator Running at About 50' Away

LOCATION COMMENTS: NA

FIELD PARAMETERS:

Dissolved Oxygen 4.71 mg/L Flow (in gpm) 6.0 GPM Oxidation-Reduction Potential 27.8 mV
pH 8.27 SU Specific Conductance 188 uS/cm Temperature 25.59 deg C
Turbidity 0.27 NTU

COLLECTED BY (PRINT)

W. Shaw / A. Vigil

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 06/04/14 1330	RECEIVED BY (Printed Name) K. Bruce (Signature) <i>K. Bruce</i>	Date/Time 6/4/14 1:30
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79430 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		1009	MEDIA:	UA	
PRS ID:		ok	SAMPLE TECH CODE:	UA	RSP
LOCATION ID: R-3i			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
ms	MSGP-Hg	1 LITER POLY	1	HNO3	Y	ms
	WSP-8011-EDB_DBCP	40 ML SEPTUM AMBER GLASS	2	Na2S2O3		
	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-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		
ok	WSP-LL-8260B	40 ML SEPTUM AMBER GLASS	2	HCL		

Analyses continued on next page

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79430 WORK ORDER: NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-LL-8270C	1 LITER AMBER GLASS	1	ICE	Y	MA
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

MA

LOCATION COMMENTS:

MA

FIELD PARAMETERS:

Dissolved Oxygen 8.66 mg/L Flow (in gpm) 0.98 GPM Oxidation-Reduction Potential 107.9 mV
 pH 7.38 SU Specific Conductance 540 uS/cm Temperature 12.99 deg C
 Turbidity 6.7 NTU

COLLECTED BY (PRINT)

D. Felton

RELINQUISHED BY (Printed Name) <u>Andrew Shobe</u> (Signature) <u>[Signature]</u>	Date/Time <u>6/4/14</u> <u>12:00</u>	RECEIVED BY <u>K. Greene</u> (Printed Name) <u>[Signature]</u> (Signature) <u>[Signature]</u>	Date/Time <u>6/4/14</u> <u>12:00</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79437 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):		1245	MEDIA:	UA	↓
PRS ID:		ok	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-3			FIELD PREP:	F	ok
LOCATION TYPE: MON			FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	y	NA
NA	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	y	NA
NA	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	y	NA

SAMPLE COMMENTS: NA

LOCATION COMMENTS: NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) W. Shaw / A. Vigil

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 6/4/14 1330	RECEIVED BY (Printed Name) K. G. ... (Signature) <i>[Signature]</i>	Date/Time 6/4/14 1:30
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 5701 EVENT NAME: LA/Pueblo (General Surveillance) Q3 MY2014
 Sampling Event_Pueblo
 SAMPLE ID: CAPU-14-79438 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/04/2014	FIELD MATRIX:	WG	
TIME COLLECTED (HH:MM):		0909	MEDIA:	UA	
PRS ID:		ak	SAMPLE TECH CODE:	UA	RSP
LOCATION ID: R-3i			FIELD PREP:	F	
LOCATION TYPE: MON			FIELD QC TYPE:	REG	
PORT: SINGLE COMPLETION			SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MP	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	13	NY
	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE		
	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) D. Fetter

RELINQUISHED BY (Printed Name) <i>[Signature]</i> (Signature) <i>[Signature]</i>	Date/Time 6/4/14 1200	RECEIVED BY (Printed Name) K. Green (Signature) <i>[Signature]</i>	Date/Time 6/4/14 12:00
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/30/2014

DATA VALIDATION REPORT

Chain Of Custody No. 2014-3500

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
350137	EPA:120.1	2				
350137	EPA:150.1	2				
350137	EPA:160.1	2				
350137	EPA:245.2	4				
350137	EPA:300.0	2				
350137	EPA:310.1	2				
350137	EPA:335.4	2				
350137	EPA:350.1	2				
350137	EPA:351.2	2				
350137	EPA:353.2	2				
350137	EPA:365.4	2				
350137	EPA:900	2				
350137	EPA:901.1	2				
350137	EPA:905.0	2				
350137	HASL-300:AM-241	2				
350137	HASL-300:ISOPU	2				
350137	HASL-300:ISOU	2				
350137	SM:A2340B	2				
350137	SW-846:6010C	2				
350137	SW-846:6020	2				
350137	SW-846:6850	2				
350137	SW-846:8011	2		2		
350137	SW-846:8081B	2				
350137	SW-846:8151A	2				
350137	SW-846:8260B	2		2		
350137	SW-846:8270D	2				
350137	SW-846:8310	2				
350137	SW-846:9060	2				

DATA VALIDATION REPORT

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
350137	EPA:120.1	1397102	1397102	2										1			1				
350137	EPA:150.1	1395344	1395344	1										1			1				
350137	EPA:150.1	1397321	1397321	1										1			1				
350137	EPA:160.1	1394571	1394571	2					1					1			1				
350137	EPA:245.2	1396344	1396342	4					1	2				1			2				
350137	EPA:300.0	1393647	1393647	2					1					1			1				
350137	EPA:310.1	1396656	1396656	2					2	1				2			1				
350137	EPA:335.4	1393812	1393811	2					1	1				1			1				
350137	EPA:350.1	1394294	1394293	2					1	2				1			2				
350137	EPA:351.2	1394292	1394290	2					1	2				1			2				
350137	EPA:353.2	1394285	1394285	2					1					1			2				
350137	EPA:365.4	1394297	1394295	2					1	1				1			1				
350137	EPA:900	1395947	1395947	2					1	1	1			1			1				
350137	EPA:901.1	1394541	1394541	2					1					1			2				
350137	EPA:905.0	1395946	1395946	2					1	1				1			1				
350137	HASL-300:AM-241	1394048	1394048	2					1					1			1				
350137	HASL-300:ISOPU	1394049	1394049	2					1					1			1				
350137	HASL-300:ISOU	1394050	1394050	2					1					1			1				
350137	SM:A2340B	1399077	1399077	2																	
350137	SW-846:6010C	1394123	1394122	2					1	1				1			1				
350137	SW-846:6020	1394090	1394089	2					1	1				1			1				
350137	SW-846:6850	1394191	1394190	2					1	1	1			1							
350137	SW-846:8011	1393888	1393887	2		2			1					1	1						
350137	SW-846:8081B	1394113	1394107	2					1	1				1	1						
350137	SW-846:8151A	1394530	1394525	2					1	1				1	1						
350137	SW-846:8260B	1396094	1396094	2		2			2					4							
350137	SW-846:8270D	1393520	1393519	2					1	1	1			1							
350137	SW-846:8310	1394138	1394132	2					1	1				1	1						
350137	SW-846:9060	1394347	1394347	2					1					1			3				

DATA VALIDATION REPORT

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-14-79439	1203112083	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203112084	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79434	1203107683	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79438	1203112637	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203107686	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203112638	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79437	1203105565	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203105566	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203105563	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79428	1203110257	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79428	1203110258	MS	0	0	1	0
EPA:245.2	INORGANIC	CAPU-14-79429	350137001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79430	350137009	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:245.2	INORGANIC	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203110253	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203110252	MB	1	0	0	0
EPA:245.2	INORGANIC	WSTMO-14-75612	1203110254	DUP	1	0	0	0
EPA:245.2	INORGANIC	WSTMO-14-75612	1203110255	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79416	1203103275	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203103277	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203103274	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79437	1203111022	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79437	1203111024	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203111025	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203111026	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203111019	MB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203111020	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
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79428	1203103654	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79428	1203103657	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79429	350137001	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAPU-14-79430	350137009	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203103660	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203103653	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79435	1203107049	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79435	1203107050	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79437	1203104864	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79437	1203104865	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203104861	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203104860	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79427	1203106955	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79427	1203106956	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79429	1203104858	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79429	1203104859	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79429	350137001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-14-79430	350137009	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203104857	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203104856	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79434	1203104835	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79435	1203107052	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203104840	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203104833	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79437	350137006	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-14-79438	350137014	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203104876	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203104869	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST09-14-74376	1203104870	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST09-14-74376	1203104873	MS	0	0	1	0
EPA:900	RAD	BDW08-14-79467	1203109196	DUP	2	0	0	0
EPA:900	RAD	BDW08-14-79467	1203109197	MS	0	0	2	0
EPA:900	RAD	BDW08-14-79467	1203109198	MSD	0	0	2	0
EPA:900	RAD	CAPU-14-79429	350137001	REG	2	0	0	0
EPA:900	RAD	CAPU-14-79430	350137009	REG	2	0	0	0
EPA:900	RAD	LCS	1203109199	LCS	0	0	2	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:900	RAD	MB	1203109195	MB	2	0	0	0
EPA:901.1	RAD	CAPU-14-79427	1203105497	DUP	5	0	0	0
EPA:901.1	RAD	CAPU-14-79429	1203105495	DUP	5	0	0	0
EPA:901.1	RAD	CAPU-14-79429	350137001	REG	5	0	0	0
EPA:901.1	RAD	CAPU-14-79430	350137009	REG	5	0	0	0
EPA:901.1	RAD	LCS	1203105496	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203105494	MB	5	0	0	0
EPA:905.0	RAD	CAPU-14-79427	1203109192	DUP	1	0	0	0
EPA:905.0	RAD	CAPU-14-79427	1203109193	MS	0	0	1	0
EPA:905.0	RAD	CAPU-14-79429	350137001	REG	1	0	0	0
EPA:905.0	RAD	CAPU-14-79430	350137009	REG	1	0	0	0
EPA:905.0	RAD	LCS	1203109194	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203109191	MB	1	0	0	0
HASL-300:AM-241	RAD	CAPU-14-79429	1203104206	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAPU-14-79429	350137001	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPU-14-79430	350137009	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203104207	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203104205	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79429	1203104209	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79429	350137001	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-14-79430	350137009	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203104210	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203104208	MB	2	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79429	1203104212	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79429	350137001	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPU-14-79430	350137009	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203104213	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203104211	MB	3	0	0	0
SM:A2340B	INORGANIC	CAPU-14-79437	350137006	REG	1	0	0	0
SM:A2340B	INORGANIC	CAPU-14-79438	350137014	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAPU-14-79437	1203104403	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAPU-14-79437	1203104404	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAPU-14-79437	350137006	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAPU-14-79438	350137014	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203104402	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203104401	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPU-14-79437	1203104338	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPU-14-79437	1203104339	MS	0	0	11	0
SW-846:6020	INORGANIC	CAPU-14-79437	350137006	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPU-14-79438	350137014	REG	11	0	0	0

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Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6020	INORGANIC	LCS	1203104337	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203104336	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAJU-14-79436	1203104532	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAJU-14-79436	1203104533	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAJU-14-79437	350137006	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAJU-14-79438	350137014	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203104531	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203104530	MB	1	0	0	0
SW-846:8011	VOC	CAJU-14-79421	350137007	FTB	2	1	0	0
SW-846:8011	VOC	CAJU-14-79422	350137015	FTB	2	1	0	0
SW-846:8011	VOC	CAJU-14-79429	350137002	REG	2	1	0	0
SW-846:8011	VOC	CAJU-14-79430	350137010	REG	2	1	0	0
SW-846:8011	VOC	LCS	1203103869	LCS	0	1	2	0
SW-846:8011	VOC	LCSD	1203103870	LCSD	0	1	2	0
SW-846:8011	VOC	MB	1203103868	MB	2	1	0	0
SW-846:8081B	PESTPCB	CAJU-14-79429	1203104376	MS	0	2	1	0
SW-846:8081B	PESTPCB	CAJU-14-79429	350137004	REG	1	2	0	0
SW-846:8081B	PESTPCB	CAJU-14-79430	350137012	REG	1	2	0	0
SW-846:8081B	PESTPCB	LCS	1203104375	LCS	0	2	1	0
SW-846:8081B	PESTPCB	LCSD	1203104384	LCSD	0	2	1	0
SW-846:8081B	PESTPCB	MB	1203104374	MB	1	2	0	0
SW-846:8151A	HERB	CAJU-14-79427	1203105476	MS	0	1	1	0
SW-846:8151A	HERB	CAJU-14-79429	350137005	REG	1	1	0	0
SW-846:8151A	HERB	CAJU-14-79430	350137013	REG	1	1	0	0
SW-846:8151A	HERB	LCS	1203105475	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203105478	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203105474	MB	1	1	0	0
SW-846:8260B	VOC	CAJU-14-79421	350137008	FTB	78	3	0	0
SW-846:8260B	VOC	CAJU-14-79422	350137016	FTB	78	3	0	0
SW-846:8260B	VOC	CAJU-14-79429	350137001	REG	78	3	0	0
SW-846:8260B	VOC	CAJU-14-79430	350137009	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203109630	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203109631	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203109632	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203109633	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203109624	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203109625	MB	78	3	0	0
SW-846:8270D	SVOC	CAJU-14-79429	350137001	REG	60	6	0	0
SW-846:8270D	SVOC	CAJU-14-79430	350137009	REG	60	6	0	0
SW-846:8270D	SVOC	LCS	1203102909	LCS	0	6	56	0

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Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8270D	SVOC	MB	1203102908	MB	60	6	0	0
SW-846:8270D	SVOC	WST09-14-79994	1203102910	MS	0	6	56	0
SW-846:8270D	SVOC	WST09-14-79994	1203102911	MSD	0	6	56	0
SW-846:8310	SVOC	CAPU-14-79429	1203104428	MS	0	1	18	0
SW-846:8310	SVOC	CAPU-14-79429	350137003	REG	18	1	0	0
SW-846:8310	SVOC	CAPU-14-79430	350137011	REG	18	1	0	0
SW-846:8310	SVOC	LCS	1203104427	LCS	0	1	18	0
SW-846:8310	SVOC	LCSD	1203104430	LCSD	0	1	18	0
SW-846:8310	SVOC	MB	1203104426	MB	18	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79415	1203105823	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79427	1203105822	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79429	350137001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-14-79430	350137009	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203105826	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203105820	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	VS-R28-V2-79984	1203112489	DUP	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203104856	METHOD BLANK	EPA:351.2	W	Total Kjeldahl Nitrogen	0.0621	J	mg/L	0.100

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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
CAPU-14-79429	1203104856	METHOD BLANK	EPA:351.2	Total Kjeldahl Nitrogen	0.0621	mg/L	0.0605	J	0.100	Y	5	100	Y	
CAPU-14-79430	1203104856	METHOD BLANK	EPA:351.2	Total Kjeldahl Nitrogen	0.0621	mg/L	0.101		0.100	Y	5	100	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
WST09-14-74376	1203104873		EPA:365.4	Total Phosphate as Phosphorus	1394295	06-11-2014	W	173		134	64	10		

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

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11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Acenaphthene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Acenaphthylene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	HASL-300-AM-241	Americium-241	U	U	R5	N	.0361	pCi/L	.0361	pCi/L	0.0446	0.0115	W	06/04/2014		1394048	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Anthracene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Benzo(a)anthracene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Benzo(a)pyrene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Benzo(b)fluoranthene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Benzo(g,h,i)perylene	U	R	SV19	Y	0.0187	ug/L	0.0187	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Benzo(k)fluoranthene	U	R	SV19	Y	0.0116	ug/L	0.0116	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	.615	pCi/L	.615	pCi/L	5.59	1.54	W	06/04/2014		1394541	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Chrysene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	1.81	pCi/L	1.81	pCi/L	7.01	1.80	W	06/04/2014		1394541	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Dibenz(a,h)anthracene	U	R	SV19	Y	0.0216	ug/L	0.0216	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Fluoranthene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Fluorene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	.905	pCi/L	.905	pCi/L	1.43	0.442	W	06/04/2014		1395947	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Indeno(1,2,3-cd)pyrene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Methylnaphthalene[1-]	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Methylnaphthalene[2-]	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Naphthalene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	-.546	pCi/L	-.546	pCi/L	10.2	2.87	W	06/04/2014		1394541	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846.8310	Phenanthrene	U	R	SV19	N	0.515	ug/L	0.515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	0	pCi/L	0	pCi/L	0.0261	0.00578	W	06/04/2014		1394049	VAL	Y

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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-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	00944	pCi/L	00944	pCi/L	0.043	0.00746	W	06/04/2014		1394049	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	11.4	pCi/L	11.4	pCi/L	73.8	19.9	W	06/04/2014		1394541	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	SVOC	SW-846:8310	Pyrene	U	R	SV19	N	0.0515	ug/L	0.0515	ug/L			W	06/04/2014		1394138	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-173	pCi/L	-173	pCi/L	5.67	1.75	W	06/04/2014		1394541	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	-108	pCi/L	-108	pCi/L	0.406	0.094	W	06/04/2014		1395946	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	J	U	I4	N	0.0605	mg/L	0.0605	mg/L			W	06/04/2014		1394292	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	0269	pCi/L	0269	pCi/L	0.0524	0.0123	W	06/04/2014		1394050	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	-00856	pCi/L	-00856	pCi/L	0.074	0.0121	W	06/04/2014		1394048	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	-1.95	pCi/L	-1.95	pCi/L	4.36	1.40	W	06/04/2014		1394541	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	-424	pCi/L	-424	pCi/L	3.56	0.967	W	06/04/2014		1394541	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	72	pCi/L	72	pCi/L	8.03	2.30	W	06/04/2014		1394541	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-00548	pCi/L	-00548	pCi/L	0.0303	0.00672	W	06/04/2014		1394049	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	00822	pCi/L	00822	pCi/L	0.0499	0.00909	W	06/04/2014		1394049	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	-6.41	pCi/L	-6.41	pCi/L	53.3	14.0	W	06/04/2014		1394541	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	417	pCi/L	417	pCi/L	3.73	0.947	W	06/04/2014		1394541	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	102	pCi/L	102	pCi/L	0.480	0.137	W	06/04/2014		1395946	VAL	Y
R-3i	2014-3500	CAPU-14-79430	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	U	U	I4	N	0.101	mg/L	0.101	mg/L			W	06/04/2014		1394292	VAL	Y

Reason Code

Description

I4

the sample result is $\leq 5x$ 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.

R5

Analyte is not detected because the amount reported is less than the MDC.

SV19

The LANL project chemist identified quality deficiencies in the reported data that requires further qualification. This code can only be used and/or under advisement by the LANL project chemist.

U LAB

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPU-14-79421	R-3	FTB	SW-846:8011	0	2
CAPU-14-79421	R-3	FTB	SW-846:8260B	0	78
CAPU-14-79422	R-3i	FTB	SW-846:8011	0	2
CAPU-14-79422	R-3i	FTB	SW-846:8260B	0	78
CAPU-14-79429	R-3	REG	EPA:245.2	0	1
CAPU-14-79429	R-3	REG	EPA:335.4	0	1
CAPU-14-79429	R-3	REG	EPA:351.2	0	1
CAPU-14-79429	R-3	REG	EPA:900	0	2
CAPU-14-79429	R-3	REG	EPA:901.1	0	5
CAPU-14-79429	R-3	REG	EPA:905.0	0	1
CAPU-14-79429	R-3	REG	HASL-300:AM-241	0	1
CAPU-14-79429	R-3	REG	HASL-300:ISOPU	0	2
CAPU-14-79429	R-3	REG	HASL-300:ISOU	0	3
CAPU-14-79429	R-3	REG	SW-846:8011	0	2
CAPU-14-79429	R-3	REG	SW-846:8081B	0	1
CAPU-14-79429	R-3	REG	SW-846:8151A	0	1
CAPU-14-79429	R-3	REG	SW-846:8260B	0	78
CAPU-14-79429	R-3	REG	SW-846:8270D	0	60
CAPU-14-79429	R-3	REG	SW-846:8310	0	18
CAPU-14-79429	R-3	REG	SW-846:9060	0	1
CAPU-14-79430	R-3i	REG	EPA:245.2	0	1
CAPU-14-79430	R-3i	REG	EPA:335.4	0	1
CAPU-14-79430	R-3i	REG	EPA:351.2	0	1
CAPU-14-79430	R-3i	REG	EPA:900	0	2
CAPU-14-79430	R-3i	REG	EPA:901.1	0	5
CAPU-14-79430	R-3i	REG	EPA:905.0	0	1
CAPU-14-79430	R-3i	REG	HASL-300:AM-241	0	1
CAPU-14-79430	R-3i	REG	HASL-300:ISOPU	0	2
CAPU-14-79430	R-3i	REG	HASL-300:ISOU	0	3
CAPU-14-79430	R-3i	REG	SW-846:8011	0	2
CAPU-14-79430	R-3i	REG	SW-846:8081B	0	1
CAPU-14-79430	R-3i	REG	SW-846:8151A	0	1
CAPU-14-79430	R-3i	REG	SW-846:8260B	0	78
CAPU-14-79430	R-3i	REG	SW-846:8270D	0	60
CAPU-14-79430	R-3i	REG	SW-846:8310	0	18
CAPU-14-79430	R-3i	REG	SW-846:9060	0	1
CAPU-14-79437	R-3	REG	EPA:120.1	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPU-14-79437	R-3	REG	EPA:150.1	0	1
CAPU-14-79437	R-3	REG	EPA:160.1	0	1
CAPU-14-79437	R-3	REG	EPA:245.2	0	1
CAPU-14-79437	R-3	REG	EPA:300.0	0	4
CAPU-14-79437	R-3	REG	EPA:310.1	0	2
CAPU-14-79437	R-3	REG	EPA:350.1	0	1
CAPU-14-79437	R-3	REG	EPA:353.2	0	1
CAPU-14-79437	R-3	REG	EPA:365.4	0	1
CAPU-14-79437	R-3	REG	SM:A2340B	0	1
CAPU-14-79437	R-3	REG	SW-846:6010C	0	17
CAPU-14-79437	R-3	REG	SW-846:6020	0	11
CAPU-14-79437	R-3	REG	SW-846:6850	0	1
CAPU-14-79438	R-3i	REG	EPA:120.1	0	1
CAPU-14-79438	R-3i	REG	EPA:150.1	0	1
CAPU-14-79438	R-3i	REG	EPA:160.1	0	1
CAPU-14-79438	R-3i	REG	EPA:245.2	0	1
CAPU-14-79438	R-3i	REG	EPA:300.0	0	4
CAPU-14-79438	R-3i	REG	EPA:310.1	0	2
CAPU-14-79438	R-3i	REG	EPA:350.1	0	1
CAPU-14-79438	R-3i	REG	EPA:353.2	0	1
CAPU-14-79438	R-3i	REG	EPA:365.4	0	1
CAPU-14-79438	R-3i	REG	SM:A2340B	0	1
CAPU-14-79438	R-3i	REG	SW-846:6010C	0	17
CAPU-14-79438	R-3i	REG	SW-846:6020	0	11
CAPU-14-79438	R-3i	REG	SW-846:6850	0	1

DATA VALIDATION REPORT

Chain Of Custody No. 2014-3500

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
352238	SW-846:8310	1				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
352238	SW-846:8310	1402650	1402649	1					1	1				1	1						

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8310	SVOC	CAMO-14-81575	1203125627	MS	0	1	18	0
SW-846:8310	SVOC	CAPU-14-79429	352238001	REG	18	1	0	0
SW-846:8310	SVOC	LCS	1203125626	LCS	0	1	18	0
SW-846:8310	SVOC	LCSD	1203125629	LCSD	0	1	18	0
SW-846:8310	SVOC	MB	1203125625	MB	18	1	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

DATA VALIDATION REPORT

6. Any surrogate recoveries outside the control limits?

No.

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

No.

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

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
1203125626	1203125629	SW-846:8310	Benzo(a)pyrene	1402649	07-17-2014	W	64	78	130	70		10	20	20
1203125626	1203125629	SW-846:8310	Benzo(k)fluoranthene	1402649	07-17-2014	W	65	78	130	70		10	18	20
1203125626	1203125629	SW-846:8310	Indeno(1,2,3-cd)pyrene	1402649	07-17-2014	W	51	60	114	57		10	17	20

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-3	2014-3500	CAPU-14-79429	REG	RE	SVOC	SW-846:8310	Benzo(a)pyrene	U	UJ	SV12a	N	0.0521	µg/L	0.0521	µg/L			W	06/04/2014		1402650	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	RE	SVOC	SW-846:8310	Benzo(k)fluoranthene	U	UJ	SV12a	N	0.026	µg/L	0.026	µg/L			W	06/04/2014		1402650	VAL	Y
R-3	2014-3500	CAPU-14-79429	REG	RE	SVOC	SW-846:8310	Indeno(1,2,3-cd)pyrene	U	UJ	SV12a	N	0.0521	µg/L	0.0521	µg/L			W	06/04/2014		1402650	VAL	Y

Description

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.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPU-14-79429	R-3	REG	SW-846:8310	0	18



July 01, 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: 350137
SDG: 2014-3500

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 06, 2014, and analyzed for GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, HPLC Polynuclear Aromatic Hydrocarbon, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2014-3500
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 350137
SDG: 2014-3500

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 350137
SDG # : 2014-3500**

July 02, 2014

Laboratory Identification:

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

Summary

Sample receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 06, 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>
350137001	CAPU-14-79429
350137002	CAPU-14-79429
350137003	CAPU-14-79429
350137004	CAPU-14-79429
350137005	CAPU-14-79429
350137006	CAPU-14-79437
350137007	CAPU-14-79421
350137008	CAPU-14-79421
350137009	CAPU-14-79430
350137010	CAPU-14-79430
350137011	CAPU-14-79430
350137012	CAPU-14-79430
350137013	CAPU-14-79430
350137014	CAPU-14-79438
350137015	CAPU-14-79422
350137016	CAPU-14-79422

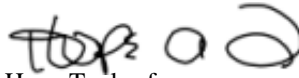
Case Narrative

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

Data Package

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

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



Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 02 July 2014

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

Chain of Custody and Supporting Documentation



SAMPLE RECEIPT & REVIEW FORM

Client: <u>LANL</u>		SDG/AR/COC/Work Order: <u>2014-3500</u>	
Received By: <u>P. W. ent</u>		Date Received: <u>6/6/14</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?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>00CPM</u>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags <u>Blue ice</u> Dry ice <u>None</u> Other (describe) <u>3,4,24c</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain-of-custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?			<input checked="" type="checkbox"/>	Sample ID's affected: <u>SEE below</u>
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>5908 1777 1332-24</u> <u>5908 1777 1321-4c</u> <u>5908 1777 1343-4c</u> <u>5908 1777 1310-3c</u>

Comments (Use Continuation Form if needed): CAPU-14-79421- Lab rec'd (1) each for 8260b + 8011 EDB.

CAPU-14-79422- Lab rec'd (2) 8260b, chain indicates 4 (1) 8011 EDB chain indicates (2).
CAPU-14-79430 Lab rec'd (3) 8270a instead of (4).

Subject: Sample receipt issue from 06/06/14

From: Pat Dent <Pat.Dent@gel.com>

Date: 6/8/2014 2:59 PM

To: "Keith R. Greene" <kgreene@lanl.gov>

CC: "team.davis" <team.davis@gel.com>, LANL@amrad.com, npatel@lanl.gov

RN#2014-3500

CAPU-14-79430 lab rec'd 3-containers chain indicates 4, for 8270c.

CAPU-14-79421 lab received 1-container each for 8260b and 8011EDB chain indicates 2-each.

CAPU-14-49422 lab received 1-8011EDB container chain indicates 2- and 2-8260b chain indicates 4.

Thanks!!

--

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

ORIGIN ID:SAFA (505) 865-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
SHIP DATE: 05JUN14
ACTWGT: 47.0 LB MAN
CAD: 0014176/CAFE2704
BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100



FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

MPS# 5908 1777 1321
Mstr# 5908 1777 1310

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 10/11

ORIGIN ID:SAFA (505) 865-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03
LOS ALAMOS, NM 87545
UNITED STATES US
SHIP DATE: 05JUN14
ACTWGT: 30.0 LB MAN
CAD: 0014176/CAFE2704
BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100



FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

MPS# 5908 1777 1332
Mstr# 5908 1777 1310

XX CHSA

29407
SC-US CHS



Part # 156148-434 R1T2 10/11

SHIP DATE: 05JUN14
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2704

505 665-9966

LAB.
DPU 03

NM 87545
ES US

BILL SENDER

IE DAVIS

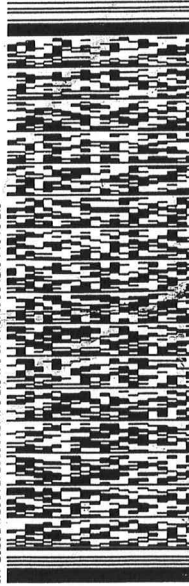
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J SAVAGE RD

CHARLESTON SC 29407

(43) 566-8171

REF: WE991158W100

FedEx
Express



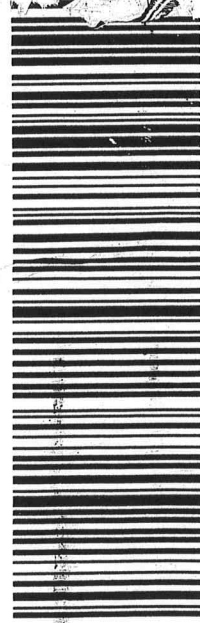
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TRK# 5908 1777 1343
0201

XX CHSA

29407
CHS

SC-US



Part # 156148-434 RIT2 10/11

ORIGIN ID: SAFA (505) 665-9966

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

LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

TO VALERIE DAVIS

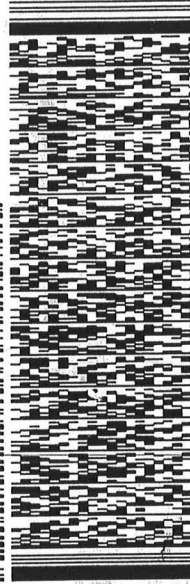
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2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: WE991158W100

FedEx
Express



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PRIORITY OVERNIGHT

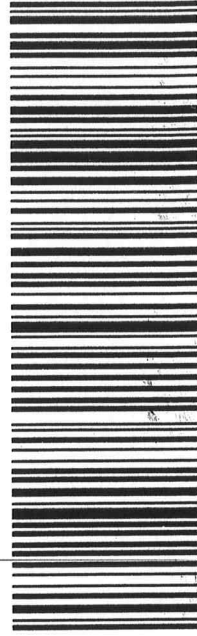
TRK# 5908 1777 1310
0201

MASTER

XX CHSA

29407
CHS

SC-US



Part # 156148-434 RIT2 10/11

518C3/A26D/6F03

1311306230126

Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

Qualifier	Explanation
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*	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 2014-3500**

Method/Analysis Information

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

Analytical Method: SW846 8260B DOE-AL

Analytical Batch Number: 1396094

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
350137001	CAPU-14-79429
350137008	CAPU-14-79421
350137009	CAPU-14-79430
350137016	CAPU-14-79422
1203109624	Method Blank (MB)
1203109625	Method Blank (MB)
1203109626	350053011(CAPU-14-79431) Post Spike (PS)
1203109627	350053011(CAPU-14-79431) Post Spike (PS)
1203109628	350053011(CAPU-14-79431) Post Spike Duplicate (PSD)
1203109629	350053011(CAPU-14-79431) Post Spike Duplicate (PSD)
1203109630	Laboratory Control Sample (LCS)
1203109631	Laboratory Control Sample (LCS)
1203109632	Laboratory Control Sample (LCS)
1203109633	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

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

Continuing Calibration Verification Requirements

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

Quality Control (QC) Information

Blank (MB) Statement

The blanks analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 350053011 (CAPU-14-79431) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement

The spike recoveries were within the required acceptance limits.

Matrix Spike Duplicate (PSD) Recovery Statement

The spike duplicate recoveries were within the required acceptance limits.

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. Samples 1203109626 (CAPU-14-79431), 1203109627 (CAPU-14-79431), 1203109628 (CAPU-14-79431), 1203109629 (CAPU-14-79431), 350137001 (CAPU-14-79429), 350137008 (CAPU-14-79421), 350137009 (CAPU-14-79430) and 350137016 (CAPU-14-79422) were not analyzed within the recommended holding. However, the samples were analyzed within two times the holding period. This satisfies the client criteria.

Sample Preservation and Integrity

All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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: 1307752.

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3500 GEL Work Order: 350137

The Qualifiers in this report are defined as follows:

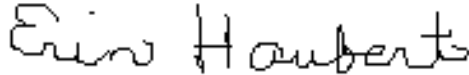
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature:



Name: Erin Haubert

Date: 02 JUL 2014

Title: Data Validator

Sample Data Summary

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3500

Lab Sample ID: 350137001

Date Collected: 06/04/2014 12:45

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79429

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1396094

Inst: VOA9.I

Dilution: 1

Run Date: 06/20/2014 18:23

Analyst: RXY1

Purge Vol: 5 mL

Prep Date: 06/20/2014 18:23

Data File: 062014V9\9R517.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HJ	2.61	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500

Lab Sample ID: 350137001

Date Collected: 06/04/2014 12:45

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79429

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1396094

Inst: VOA9.I

Dilution: 1

Run Date: 06/20/2014 18:23

Analyst: RXY1

Purge Vol: 5 mL

Prep Date: 06/20/2014 18:23

Data File: 062014V9\9R517.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3500

Lab Sample ID: 350137001

Date Collected: 06/04/2014 12:45

Date Received: 06/06/2014 08:55

Matrix: W

Client ID: CAPU-14-79429

Batch ID: 1396094

Run Date: 06/20/2014 18:23

Prep Date: 06/20/2014 18:23

Data File: 062014V9\9R517.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA9.I

Analyst: RXY1

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	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	45.6	50.0	ug/L 91.1	(78%-124%)
Bromofluorobenzene	44.9	50.0	ug/L 89.8	(80%-120%)
Toluene-d8	47.2	50.0	ug/L 94.5	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.286	108	ug/L	0	J
	unknown	5.295	7.85	ug/L	0	J
	unknown siloxane	12.291	5.98	ug/L	0	J
	unknown siloxane	14.663	9.88	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Date Collected: 06/04/2014 12:45	Matrix: W
Lab Sample ID: 350137008	Date Received: 06/06/2014 08:55	
Client Sample: 8260	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79421	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/19/2014 16:18	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/19/2014 16:18		
Data File: 061914V9\9R420.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	350137008	Date Received:	06/06/2014 08:55		
Client Sample:	8260	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79421	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/19/2014 16:18	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/19/2014 16:18				
Data File:	061914V9\9R420.D	Column:	DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3500	Date Collected: 06/04/2014 12:45	Matrix: W
Lab Sample ID: 350137008	Date Received: 06/06/2014 08:55	
Client Sample: 8260	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79421	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/19/2014 16:18	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/19/2014 16:18		
Data File: 061914V9\9R420.D	Column: DB-624	

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.6	50.0	95.2	(78%-124%)
Bromofluorobenzene	45.0	50.0	89.9	(80%-120%)
Toluene-d8	47.4	50.0	94.7	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.286	51.2	ug/L	0	J
	unknown siloxane	14.663	5.35	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3500

Lab Sample ID: 350137009

Date Collected: 06/04/2014 10:09

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79430

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1396094

Inst: VOA9.I

Dilution: 1

Run Date: 06/20/2014 18:51

Analyst: RXY1

Purge Vol: 5 mL

Prep Date: 06/20/2014 18:51

Data File: 062014V9\9R518.D

Column: DB-624

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500

Lab Sample ID: 350137009

Date Collected: 06/04/2014 10:09

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Client ID: CAPU-14-79430

Method: SW846 8260B DOE-AL

SOP Ref: GL-OA-E-038

Batch ID: 1396094

Inst: VOA9.I

Dilution: 1

Run Date: 06/20/2014 18:51

Analyst: RXY1

Purge Vol: 5 mL

Prep Date: 06/20/2014 18:51

Data File: 062014V9\9R518.D

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2014-3500

Lab Sample ID: 350137009

Date Collected: 06/04/2014 10:09

Date Received: 06/06/2014 08:55

Matrix: W

Client ID: CAPU-14-79430

Batch ID: 1396094

Run Date: 06/20/2014 18:51

Prep Date: 06/20/2014 18:51

Data File: 062014V9\9R518.D

Client: ARSL004

Method: SW846 8260B DOE-AL

Inst: VOA9.I

Analyst: RXY1

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
156-60-5	trans-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	46.5	50.0	ug/L 92.9	(78%-124%)
Bromofluorobenzene	47.3	50.0	ug/L 94.6	(80%-120%)
Toluene-d8	47.9	50.0	ug/L 95.7	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.286	167	ug/L	0	J
	unknown siloxane	14.663	18.6	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Date Collected: 06/04/2014 09:09	Matrix: W
Lab Sample ID: 350137016	Date Received: 06/06/2014 08:55	
Client Sample: 8260	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79422	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/19/2014 16:46	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/19/2014 16:46		
Data File: 061914V9\9R421.D	Column: DB-624	

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 09:09	Matrix:	W
Lab Sample ID:	350137016	Date Received:	06/06/2014 08:55		
Client Sample:	8260	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79422	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/19/2014 16:46	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/19/2014 16:46				
Data File:	061914V9\9R421.D	Column:	DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 09:09	Matrix:	W
Lab Sample ID:	350137016	Date Received:	06/06/2014 08:55		
Client Sample:	8260	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79422	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/19/2014 16:46	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/19/2014 16:46				
Data File:	061914V9\9R421.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.8	50.0	95.6	(78%-124%)
Bromofluorobenzene	45.1	50.0	90.2	(80%-120%)
Toluene-d8	47.1	50.0	94.2	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.286	55.9	ug/L	0	J
	unknown siloxane	14.663	9.44	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3500**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203109630	LCS for batch 1396094	95	90	86
1203109631	LCS for batch 1396094	94	92	94
1203109624	MB for batch 1396094	95	93	87
350137008	CAPU-14-79421	95	95	90
350137016	CAPU-14-79422	96	94	90
1203109632	LCS for batch 1396094	87	91	87
1203109633	LCS for batch 1396094	89	93	93
1203109625	MB for batch 1396094	89	92	89
350137001	CAPU-14-79429	91	94	90
350137009	CAPU-14-79430	93	96	95
1203109626	CAPU-14-79431PS	90	92	87
1203109628	CAPU-14-79431PSD	88	95	85
1203109627	CAPU-14-79431PS	88	91	89
1203109629	CAPU-14-79431PSD	88	93	94

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

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SDG Number: 2014-3500

Sample Type: Post Spike

Client ID: CAPU-14-79431PS

Matrix: W

Lab Sample ID 1203109626

Instrument: VOA9.I

Analysis Date: 06/20/2014 19:47

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00	HU	97.4	97 72-120
75-05-8	PS Acetonitrile	1250	0.00	HU	993	79 61-135
67-64-1	PS Acetone	250	0.00	HU	137	55 29-144
74-88-4	PS Iodomethane	250	0.00	HU	246	99 73-120
75-15-0	PS Carbon disulfide	250	0.00	HU	233	93 79-138
108-05-4	PS Vinyl acetate	250	0.00	HU	223	89 60-136
78-93-3	PS 2-Butanone	250	0.00	HU	158	63 38-136
108-10-1	PS 4-Methyl-2-pentanone	250	0.00	HU	198	79 70-132
591-78-6	PS 2-Hexanone	250	0.00	HU	169	68 48-137
75-71-8	PS Dichlorodifluoromethane	50.0	0.00	HU	37.7	75 51-133
74-87-3	PS Chloromethane	50.0	0.00	HU	36.1	72 54-135
75-01-4	PS Vinyl chloride	50.0	0.00	HU	39.9	80 52-129
74-83-9	PS Bromomethane	50.0	0.00	HU	40.9	82 67-128
75-00-3	PS Chloroethane	50.0	0.00	HU	42.2	84 69-120
75-69-4	PS Trichlorofluoromethane	50.0	0.00	HU	48.0	96 66-126
60-29-7	PS Ethyl ether	50.0	0.00	HU	44.3	89 69-120
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00	HU	42.1	84 74-130
75-09-2	PS Methylene chloride	50.0	0.00	HU	41.6	83 73-120
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00	HU	43.1	86 71-124
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00	HU	44.8	90 75-124
75-34-3	PS 1,1-Dichloroethane	50.0	0.00	HU	44.6	89 76-122
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00	HU	45.0	90 77-121

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2014-3500

Sample Type: Post Spike

Client ID: CAPU-14-79431PS

Matrix: W

Lab Sample ID 1203109626

Instrument: VOA9.I

Analysis Date: 06/20/2014 19:47

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS 2,2-Dichloropropane	50.0	0.00	HU 48.3	97	72-129
74-97-5	PS Bromochloromethane	50.0	0.00	HU 50.9	102	78-122
67-66-3	PS Chloroform	50.0	0.00	HU 44.8	90	75-123
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00	HU 48.0	96	76-129
563-58-6	PS 1,1-Dichloropropene	50.0	0.00	HU 45.0	90	76-125
56-23-5	PS Carbon tetrachloride	50.0	0.00	HU 50.8	102	76-132
107-06-2	PS 1,2-Dichloroethane	50.0	0.00	HU 39.8	80	68-128
71-43-2	PS Benzene	50.0	0.00	HU 45.6	91	75-120
79-01-6	PS Trichloroethylene	50.0	0.00	HU 47.0	94	75-125
78-87-5	PS 1,2-Dichloropropane	50.0	0.00	HU 42.6	85	75-120
74-95-3	PS Dibromomethane	50.0	0.00	HU 41.9	84	77-122
75-27-4	PS Bromodichloromethane	50.0	0.00	HU 45.6	91	76-129
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00	HU 44.6	89	75-127
108-88-3	PS Toluene	50.0	0.00	HU 43.2	86	72-120
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00	HU 43.2	86	73-123
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00	HU 42.3	85	77-120
142-28-9	PS 1,3-Dichloropropane	50.0	0.00	HU 40.8	82	73-120
127-18-4	PS Tetrachloroethylene	50.0	0.00	HU 49.8	100	67-124
124-48-1	PS Dibromochloromethane	50.0	0.00	HU 50.0	100	70-130
108-90-7	PS Chlorobenzene	50.0	0.00	HU 44.8	90	74-120
100-41-4	PS Ethylbenzene	50.0	0.00	HU 45.6	91	72-120
95-47-6	PS o-Xylene	50.0	0.00	HU 50.6	101	72-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2014-3500

Sample Type: Post Spike

Client ID: CAPU-14-79431PS

Matrix: W

Lab Sample ID 1203109626

Instrument: VOA9.I

Analysis Date: 06/20/2014 19:47

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	PS Styrene	50.0	0.00	HU 50.2	100	74-124
75-25-2	PS Bromoform	50.0	0.00	HU 49.2	98	61-135
98-82-8	PS Isopropylbenzene	50.0	0.00	HU 44.9	90	71-124
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00	HU 37.9	76	74-124
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00	HU 38.2	76	71-125
108-86-1	PS Bromobenzene	50.0	0.00	HU 46.6	93	72-120
103-65-1	PS n-Propylbenzene	50.0	0.00	HU 40.8	82	69-121
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00	HU 45.3	91	71-123
95-49-8	PS 2-Chlorotoluene	50.0	0.00	HU 44.6	89	71-120
106-43-4	PS 4-Chlorotoluene	50.0	0.00	HU 41.2	82	70-120
98-06-6	PS tert-Butylbenzene	50.0	0.00	HU 49.8	100	72-124
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00	HU 43.1	86	71-122
135-98-8	PS sec-Butylbenzene	50.0	0.00	HU 47.1	94	71-124
99-87-6	PS 4-Isopropyltoluene	50.0	0.00	HU 47.7	95	70-124
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00	HU 45.6	91	70-120
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00	HU 43.5	87	70-120
104-51-8	PS n-Butylbenzene	50.0	0.00	HU 42.9	86	69-125
87-68-3	PS Hexachlorobutadiene	50.0	0.00	HU 52.4	105	60-129
91-20-3	PS Naphthalene	50.0	0.00	HU 42.6	85	58-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00	HU 43.2	86	52-132
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00	HU 43.8	88	59-126
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00	HU 50.9	102	78-128

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Post Spike

Client ID: CAPU-14-79431PS

Matrix: W

Lab Sample ID 1203109626

Instrument: VOA9.I

Analysis Date: 06/20/2014 19:47

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00	HU	46.2	92	72-120
71-36-3	PS n-Butyl alcohol	5000	0.00	HU	4740	95	64-138

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79431PSD

Matrix: W

Lab Sample ID 1203109628

Instrument: VOA9.I

Analysis Date: 06/20/2014 20:15

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00	HU 112	112	72-120	14	0-20
75-05-8	PSD Acetonitrile	1250	0.00	HU 1050	84	61-135	6	0-20
67-64-1	PSD Acetone	250	0.00	HU 145	58	29-144	5	0-20
74-88-4	PSD Iodomethane	250	0.00	HU 266	106	73-120	8	0-20
75-15-0	PSD Carbon disulfide	250	0.00	HU 251	100	79-138	7	0-20
108-05-4	PSD Vinyl acetate	250	0.00	HU 231	92	60-136	4	0-20
78-93-3	PSD 2-Butanone	250	0.00	HU 177	71	38-136	11	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00	HU 225	90	70-132	13	0-20
591-78-6	PSD 2-Hexanone	250	0.00	HU 190	76	48-137	12	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00	HU 39.0	78	51-133	3	0-20
74-87-3	PSD Chloromethane	50.0	0.00	HU 36.9	74	54-135	2	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00	HU 39.9	80	52-129	0	0-20
74-83-9	PSD Bromomethane	50.0	0.00	HU 39.8	80	67-128	3	0-20
75-00-3	PSD Chloroethane	50.0	0.00	HU 43.0	86	69-120	2	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00	HU 48.4	97	66-126	1	0-20
60-29-7	PSD Ethyl ether	50.0	0.00	HU 46.3	93	69-120	4	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00	HU 46.3	93	74-130	10	0-20
75-09-2	PSD Methylene chloride	50.0	0.00	HU 45.0	90	73-120	8	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00	HU 47.2	94	71-124	9	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00	HU 48.4	97	75-124	8	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00	HU 48.3	97	76-122	8	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00	HU 48.4	97	77-121	7	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79431PSD

Matrix: W

Lab Sample ID 1203109628

Instrument: VOA9.I

Analysis Date: 06/20/2014 20:15

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00	HU 51.9	104	72-129	7	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00	HU 54.2	108	78-122	6	0-20
67-66-3	PSD Chloroform	50.0	0.00	HU 48.1	96	75-123	7	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00	HU 52.1	104	76-129	8	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00	HU 49.5	99	76-125	10	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00	HU 54.1	108	76-132	6	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00	HU 44.2	88	68-128	10	0-20
71-43-2	PSD Benzene	50.0	0.00	HU 50.1	100	75-120	10	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00	HU 53.0	106	75-125	12	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00	HU 48.4	97	75-120	13	0-20
74-95-3	PSD Dibromomethane	50.0	0.00	HU 47.1	94	77-122	12	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00	HU 50.4	101	76-129	10	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00	HU 51.6	103	75-127	15	0-20
108-88-3	PSD Toluene	50.0	0.00	HU 50.7	101	72-120	16	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00	HU 49.7	99	73-123	14	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00	HU 48.4	97	77-120	14	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00	HU 47.5	95	73-120	15	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00	HU 59.6	119	67-124	18	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00	HU 57.2	114	70-130	14	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00	HU 51.8	104	74-120	15	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00	HU 52.2	104	72-120	13	0-20
95-47-6	PSD o-Xylene	50.0	0.00	HU 57.4	115	72-120	13	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79431PSD

Matrix: W

Lab Sample ID 1203109628

Instrument: VOA9.I

Analysis Date: 06/20/2014 20:15

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
100-42-5	PSD Styrene	50.0	0.00	HU 57.5	115	74-124	14	0-20
75-25-2	PSD Bromoform	50.0	0.00	HU 54.8	110	61-135	11	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00	HU 51.5	103	71-124	14	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00	HU 42.8	86	74-124	12	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00	HU 43.3	87	71-125	13	0-20
108-86-1	PSD Bromobenzene	50.0	0.00	HU 51.3	103	72-120	10	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00	HU 45.6	91	69-121	11	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00	HU 51.0	102	71-123	12	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00	HU 50.7	101	71-120	13	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00	HU 47.0	94	70-120	13	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00	HU 57.0	114	72-124	14	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00	HU 48.6	97	71-122	12	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00	HU 52.9	106	71-124	12	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00	HU 52.9	106	70-124	10	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00	HU 51.0	102	70-120	11	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00	HU 48.9	98	70-120	12	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00	HU 48.8	98	69-125	13	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00	HU 58.5	117	60-129	11	0-20
91-20-3	PSD Naphthalene	50.0	0.00	HU 49.5	99	58-134	15	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00	HU 50.4	101	52-132	16	0-20
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00	HU 50.4	101	59-126	14	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00	HU 58.2	116	78-128	13	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79431PSD

Matrix: W

Lab Sample ID 1203109628

Instrument: VOA9.I

Analysis Date: 06/20/2014 20:15

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00	HU	51.9	104	72-120	12	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00	HU	5270	105	64-138	11	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500

Sample Type: Post Spike

Client ID: CAPU-14-79431PS

Matrix: W

Lab Sample ID 1203109627

Instrument: VOA9.I

Analysis Date: 06/20/2014 20:43

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00	HU 224	90	57-131
76-13-1	PS Trichlorotrifluoroethane	250	0.00	HU 256	102	76-133
107-05-1	PS Allyl chloride	250	0.00	HU 264	106	65-130
107-13-1	PS Acrylonitrile	250	0.00	HU 225	90	70-128
107-12-0	PS Propionitrile	250	0.00	HU 250	100	68-131
126-98-7	PS Methacrylonitrile	250	0.00	HU 248	99	64-129
80-62-6	PS Methyl methacrylate	250	0.00	HU 253	101	76-120
97-63-2	PS Ethyl methacrylate	250	0.00	HU 245	98	72-122
78-83-1	PS Isobutyl alcohol	2500	0.00	HU 2390	96	72-134
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00	HU 61.2	122	46-140

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3500

Sample Type: Post Spike Duplicate

Client ID: CAPU-14-79431PSD

Matrix: W

Lab Sample ID 1203109629

Instrument: VOA9.I

Analysis Date: 06/20/2014 21:11

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00	HU 212	85	57-131	6	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00	HU 253	101	76-133	1	0-20
107-05-1	PSD Allyl chloride	250	0.00	HU 264	106	65-130	0	0-20
107-13-1	PSD Acrylonitrile	250	0.00	HU 218	87	70-128	3	0-20
107-12-0	PSD Propionitrile	250	0.00	HU 238	95	68-131	5	0-20
126-98-7	PSD Methacrylonitrile	250	0.00	HU 245	98	64-129	1	0-20
80-62-6	PSD Methyl methacrylate	250	0.00	HU 251	100	76-120	1	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00	HU 247	99	72-122	1	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00	HU 2360	94	72-134	1	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00	HU 61.1	122	46-140	0	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109630

Instrument: VOA9.I

Analysis Date: 06/19/2014 08:19

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	105	105	80-120
75-05-8	LCS Acetonitrile	1250	0.0	1250	100	63-131
67-64-1	LCS Acetone	250	0.0	337	135	50-149
74-88-4	LCS Iodomethane	250	0.0	253	101	75-120
75-15-0	LCS Carbon disulfide	250	0.0	232	93	80-136
108-05-4	LCS Vinyl acetate	250	0.0	316	126	78-130
78-93-3	LCS 2-Butanone	250	0.0	302	121	57-148
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	280	112	75-130
591-78-6	LCS 2-Hexanone	250	0.0	320	128	64-149
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	39.7	79	58-129
74-87-3	LCS Chloromethane	50.0	0.0	37.7	75	59-131
75-01-4	LCS Vinyl chloride	50.0	0.0	40.0	80	59-127
74-83-9	LCS Bromomethane	50.0	0.0	41.6	83	70-125
75-00-3	LCS Chloroethane	50.0	0.0	42.0	84	73-120
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	45.8	92	73-123
60-29-7	LCS Ethyl ether	50.0	0.0	50.1	100	73-120
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	41.9	84	80-128
75-09-2	LCS Methylene chloride	50.0	0.0	43.7	87	75-120
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	53.7	107	74-122
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	45.0	90	80-121
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	45.5	91	79-120
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	46.9	94	79-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109630

Instrument: VOA9.I

Analysis Date: 06/19/2014 08:19

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	51.8	104	79-130
74-97-5	LCS Bromochloromethane	50.0	0.0	55.7	111	80-121
67-66-3	LCS Chloroform	50.0	0.0	46.3	93	79-120
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	49.6	99	80-128
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	46.6	93	80-123
56-23-5	LCS Carbon tetrachloride	50.0	0.0	50.7	101	80-131
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	47.1	94	73-120
71-43-2	LCS Benzene	50.0	0.0	48.3	97	78-120
79-01-6	LCS Trichloroethylene	50.0	0.0	49.9	100	80-121
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	47.9	96	79-120
74-95-3	LCS Dibromomethane	50.0	0.0	49.2	98	80-120
75-27-4	LCS Bromodichloromethane	50.0	0.0	51.8	104	80-126
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	55.6	111	80-125
108-88-3	LCS Toluene	50.0	0.0	46.6	93	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	50.0	100	78-120
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	49.1	98	75-120
127-18-4	LCS Tetrachloroethylene	50.0	0.0	54.6	109	74-123
124-48-1	LCS Dibromochloromethane	50.0	0.0	58.3	117	73-129
108-90-7	LCS Chlorobenzene	50.0	0.0	48.8	98	79-120
100-41-4	LCS Ethylbenzene	50.0	0.0	48.9	98	79-120
95-47-6	LCS o-Xylene	50.0	0.0	53.9	108	80-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109630

Instrument: VOA9.I

Analysis Date: 06/19/2014 08:19

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	55.0	110	80-121
75-25-2	LCS Bromoform	50.0	0.0	61.1	122	65-135
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.8	94	79-121
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	46.4	93	76-123
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	48.6	97	76-120
108-86-1	LCS Bromobenzene	50.0	0.0	50.8	102	79-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	42.4	85	80-123
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	48.5	97	80-120
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	47.9	96	79-120
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	44.6	89	79-120
98-06-6	LCS tert-Butylbenzene	50.0	0.0	50.9	102	79-122
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	46.4	93	80-120
135-98-8	LCS sec-Butylbenzene	50.0	0.0	47.7	95	80-121
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	49.1	98	80-121
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	50.0	100	76-120
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	48.8	98	78-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	45.1	90	80-123
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	53.9	108	71-128
91-20-3	LCS Naphthalene	50.0	0.0	57.4	115	64-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	54.7	109	61-132
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	55.3	111	66-130
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	57.4	115	80-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109630

Instrument: VOA9.I

Analysis Date: 06/19/2014 08:19

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	52.0	104	78-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	6670	133	67-137

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109631

Instrument: VOA9.I

Analysis Date: 06/19/2014 09:16

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	182	73	65-126
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	194	78	73-132
107-05-1	LCS Allyl chloride	250	0.0	210	84	67-127
107-13-1	LCS Acrylonitrile	250	0.0	220	88	74-122
107-12-0	LCS Propionitrile	250	0.0	258	103	73-124
126-98-7	LCS Methacrylonitrile	250	0.0	241	96	68-123
80-62-6	LCS Methyl methacrylate	250	0.0	248	99	79-120
97-63-2	LCS Ethyl methacrylate	250	0.0	236	94	77-120
78-83-1	LCS Isobutyl alcohol	2500	0.0	2580	103	72-133
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	50.3	101	57-142

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109632

Instrument: VOA9.I

Analysis Date: 06/20/2014 13:14

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	101	101	80-120
75-05-8	LCS Acetonitrile	1250	0.0	1020	81	63-131
67-64-1	LCS Acetone	250	0.0	286	115	50-149
74-88-4	LCS Iodomethane	250	0.0	234	93	75-120
75-15-0	LCS Carbon disulfide	250	0.0	219	88	80-136
108-05-4	LCS Vinyl acetate	250	0.0	259	104	78-130
78-93-3	LCS 2-Butanone	250	0.0	247	99	57-148
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	239	96	75-130
591-78-6	LCS 2-Hexanone	250	0.0	268	107	64-149
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	36.4	73	58-129
74-87-3	LCS Chloromethane	50.0	0.0	33.4	67	59-131
75-01-4	LCS Vinyl chloride	50.0	0.0	36.2	72	59-127
74-83-9	LCS Bromomethane	50.0	0.0	37.3	75	70-125
75-00-3	LCS Chloroethane	50.0	0.0	37.4	75	73-120
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	42.0	84	73-123
60-29-7	LCS Ethyl ether	50.0	0.0	42.1	84	73-120
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	40.0	80	80-128
75-09-2	LCS Methylene chloride	50.0	0.0	40.4	81	75-120
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	47.4	95	74-122
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	42.8	86	80-121
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	42.4	85	79-120
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	43.8	88	79-120

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109632

Instrument: VOA9.I

Analysis Date: 06/20/2014 13:14

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	49.0	98	79-130
74-97-5	LCS Bromochloromethane	50.0	0.0	48.7	97	80-121
67-66-3	LCS Chloroform	50.0	0.0	43.3	87	79-120
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	46.1	92	80-128
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	44.5	89	80-123
56-23-5	LCS Carbon tetrachloride	50.0	0.0	47.9	96	80-131
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	41.8	84	73-120
71-43-2	LCS Benzene	50.0	0.0	45.4	91	78-120
79-01-6	LCS Trichloroethylene	50.0	0.0	47.8	96	80-121
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	43.9	88	79-120
74-95-3	LCS Dibromomethane	50.0	0.0	44.1	88	80-120
75-27-4	LCS Bromodichloromethane	50.0	0.0	47.3	95	80-126
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	50.1	100	80-125
108-88-3	LCS Toluene	50.0	0.0	45.5	91	78-120
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.0	96	79-121
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	45.8	92	78-120
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	44.5	89	75-120
127-18-4	LCS Tetrachloroethylene	50.0	0.0	52.5	105	74-123
124-48-1	LCS Dibromochloromethane	50.0	0.0	52.4	105	73-129
108-90-7	LCS Chlorobenzene	50.0	0.0	46.7	93	79-120
100-41-4	LCS Ethylbenzene	50.0	0.0	47.2	94	79-120
95-47-6	LCS o-Xylene	50.0	0.0	51.1	102	80-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109632

Instrument: VOA9.I

Analysis Date: 06/20/2014 13:14

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	LCS Styrene	50.0	0.0	52.1	104	80-121
75-25-2	LCS Bromoform	50.0	0.0	55.8	112	65-135
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.9	94	79-121
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	41.2	82	76-123
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	43.2	86	76-120
108-86-1	LCS Bromobenzene	50.0	0.0	49.2	98	79-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	42.1	84	80-123
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	47.5	95	80-120
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	46.8	94	79-120
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	44.1	88	79-120
98-06-6	LCS tert-Butylbenzene	50.0	0.0	51.3	103	79-122
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	45.3	91	80-120
135-98-8	LCS sec-Butylbenzene	50.0	0.0	47.4	95	80-121
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	48.5	97	80-121
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	48.0	96	76-120
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	45.7	91	78-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	44.0	88	80-123
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	54.7	109	71-128
91-20-3	LCS Naphthalene	50.0	0.0	51.5	103	64-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	51.4	103	61-132
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	52.8	106	66-130
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.9	106	80-125

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109632

Instrument: VOA9.I

Analysis Date: 06/20/2014 13:14

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	48.7	97	78-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5350	107	67-137

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1396094

Matrix: GROUND WATER

Lab Sample ID 1203109633

Instrument: VOA9.I

Analysis Date: 06/20/2014 14:38

Dilution: 1

Analyst: RXY1

Purge Vol: 5 mL

Batch ID: 1396094

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	228	91	65-126
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	249	100	73-132
107-05-1	LCS Allyl chloride	250	0.0	254	102	67-127
107-13-1	LCS Acrylonitrile	250	0.0	223	89	74-122
107-12-0	LCS Propionitrile	250	0.0	257	103	73-124
126-98-7	LCS Methacrylonitrile	250	0.0	246	99	68-123
80-62-6	LCS Methyl methacrylate	250	0.0	260	104	79-120
97-63-2	LCS Ethyl methacrylate	250	0.0	260	104	77-120
78-83-1	LCS Isobutyl alcohol	2500	0.0	2460	98	72-133
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	60.1	120	57-142

Method Blank Summary

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SDG Number:	2014-3500	Client:	ARSL004	Matrix:	GROUND WATER
Client ID:	MB for batch 1396094	Instrument ID:	VOA9.I	Data File:	061914V9\9R406B3.D
Lab Sample ID:	1203109624	Prep Date:	06/19/2014 09:44	Analyzed:	06/19/14 09:44
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 1396094	1203109630	061914V9\9R403L3.D	06/19/14	0819
02 LCS for batch 1396094	1203109631	061914V9\9R405L3.D	06/19/14	0916
03 CAPU-14-79421	350137008	061914V9\9R420.D	06/19/14	1618
04 CAPU-14-79422	350137016	061914V9\9R421.D	06/19/14	1646

Method Blank Summary

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SDG Number: 2014-3500

Client: ARSL004

Matrix: GROUND WATER

Client ID: MB for batch 1396094

Instrument ID: VOA9.I

Data File: 062014V9\9R511B.D

Lab Sample ID: 1203109625

Prep Date: 06/20/2014 15:34

Analyzed: 06/20/14 15:34

Column: DB-624

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

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
06 LCS for batch 1396094	1203109632	062014V9\9R506L.D	06/20/14	1314
07 LCS for batch 1396094	1203109633	062014V9\9R509L.D	06/20/14	1438
08 CAPU-14-79429	350137001	062014V9\9R517.D	06/20/14	1823
09 CAPU-14-79430	350137009	062014V9\9R518.D	06/20/14	1851
10 CAPU-14-79431PS	1203109626	062014V9\9R520.D	06/20/14	1947
11 CAPU-14-79431PSD	1203109628	062014V9\9R521.D	06/20/14	2015
12 CAPU-14-79431PS	1203109627	062014V9\9R522.D	06/20/14	2043
13 CAPU-14-79431PSD	1203109629	062014V9\9R523.D	06/20/14	2111

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109624	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: MB for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/19/2014 09:44	Analyst: RXY1
Prep Date: 06/19/2014 09:44	Purge Vol: 5 mL
Data File: 061914V9\9R406B3.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	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
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: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109624	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: MB for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/19/2014 09:44	Analyst: RXY1
Prep Date: 06/19/2014 09:44	Purge Vol: 5 mL
Data File: 061914V9\9R406B3.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	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	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:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109624		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	MB for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/19/2014 09:44	Analyst:	RXY1
Prep Date:	06/19/2014 09:44	Purge Vol:	5 mL
Data File:	061914V9\9R406B3.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	47.7	50.0	95.5	(78%-124%)
Bromofluorobenzene	43.4	50.0	86.7	(80%-120%)
Toluene-d8	46.7	50.0	93.4	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.197	30.3	ug/L	0	J
	unknown	5.295	8.96	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109625		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	MB for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/20/2014 15:34	Analyst:	RXY1
Prep Date:	06/20/2014 15:34	Purge Vol:	5 mL
Data File:	062014V9\9R511B.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	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00
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: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109625	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: MB for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/20/2014 15:34	Analyst: RXY1
Prep Date: 06/20/2014 15:34	Purge Vol: 5 mL
Data File: 062014V9\9R511B.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	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	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: 2014-3500		Matrix:	GROUND WATER
Lab Sample ID: 1203109625			
Client Sample: QC for batch 1396094	Client: ARSL004	Project:	QC
Client ID: MB for batch 1396094	Method: SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution:	1
Run Date: 06/20/2014 15:34	Analyst: RXY1	Purge Vol:	5 mL
Prep Date: 06/20/2014 15:34			
Data File: 062014V9\9R511B.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	44.4	50.0	ug/L 88.8	(78%-124%)
Bromofluorobenzene	44.3	50.0	ug/L 88.6	(80%-120%)
Toluene-d8	45.9	50.0	ug/L 91.9	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	4.286	34.5	ug/L	0	J
	unknown	16.62	5.8	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Date Collected: 06/03/2014 11:48	Matrix: W
Lab Sample ID: 1203109626	Date Received: 06/05/2014 09:00	
Client Sample: QC for batch 1396094	Client: ARSL004	Project: QC
Client ID: CAPU-14-79431PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/20/2014 19:47	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/20/2014 19:47		
Data File: 062014V9\9R520.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	H	50.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	H	48.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	H	37.9	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	H	42.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	H	44.6	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	H	42.1	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	H	45.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	H	43.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	H	38.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	H	43.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	H	43.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	H	46.2	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	H	39.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	H	42.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	H	45.3	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	H	45.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	H	40.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	H	43.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	H	48.3	ug/L	0.300	1.00
78-93-3	2-Butanone	H	158	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	H	44.6	ug/L	0.300	1.00
591-78-6	2-Hexanone	H	169	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	H	41.2	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	H	47.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	H	198	ug/L	1.50	5.00
67-64-1	Acetone	H	137	ug/L	3.00	10.0
75-05-8	Acetonitrile	H	993	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	H	45.6	ug/L	0.300	1.00
108-86-1	Bromobenzene	H	46.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane	H	50.9	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	H	45.6	ug/L	0.300	1.00
75-25-2	Bromoform	H	49.2	ug/L	0.300	1.00
74-83-9	Bromomethane	H	40.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide	H	233	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109626	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 19:47	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 19:47				
Data File:	062014V9\9R520.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	H	50.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene	H	44.8	ug/L	0.300	1.00
75-00-3	Chloroethane	H	42.2	ug/L	0.300	1.00
67-66-3	Chloroform	H	44.8	ug/L	0.300	1.00
74-87-3	Chloromethane	H	36.1	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	H	50.0	ug/L	0.300	1.00
74-95-3	Dibromomethane	H	41.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	H	37.7	ug/L	0.300	1.00
60-29-7	Ethyl ether	H	44.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	H	45.6	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	H	52.4	ug/L	0.300	1.00
74-88-4	Iodomethane	H	246	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	H	44.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	H	41.6	ug/L	3.00	10.0
91-20-3	Naphthalene	H	42.6	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	H	50.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	H	49.8	ug/L	0.300	1.00
108-88-3	Toluene	H	43.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene	H	47.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	H	48.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	H	223	ug/L	1.50	5.00
75-01-4	Vinyl chloride	H	39.9	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	H	45.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	H	44.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	H	97.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	H	4740	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	H	42.9	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	H	40.8	ug/L	0.300	1.00
95-47-6	o-Xylene	H	50.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	H	47.1	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	H	43.1	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	H	49.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109626	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 19:47	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 19:47				
Data File:	062014V9\9R520.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	H	44.8	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	H	43.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.8	50.0	ug/L	89.5 (78%-124%)
Bromofluorobenzene	43.4	50.0	ug/L	86.9 (80%-120%)
Toluene-d8	46.1	50.0	ug/L	92.2 (80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Date Collected: 06/03/2014 11:48	Matrix: W
Lab Sample ID: 1203109627	Date Received: 06/05/2014 09:00	
Client Sample: QC for batch 1396094	Client: ARSL004	Project: QC
Client ID: CAPU-14-79431PS	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/20/2014 20:43	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/20/2014 20:43		
Data File: 062014V9\9R522.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	EH	61.2	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	H	224	ug/L	1.50	5.00
107-13-1	Acrylonitrile	H	225	ug/L	1.00	5.00
107-05-1	Allyl chloride	H	264	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

**Volatile
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Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109627	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 20:43	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 20:43				
Data File:	062014V9\9R522.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	H	245	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	H	2390	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	H	248	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	H	253	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	H	250	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	H	256	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109627	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PS	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 20:43	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 20:43				
Data File:	062014V9\9R522.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.2	50.0	ug/L	88.3	(78%-124%)
Bromofluorobenzene	44.7	50.0	ug/L	89.4	(80%-120%)
Toluene-d8	45.6	50.0	ug/L	91.1	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109628	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 20:15	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 20:15				
Data File:	062014V9\9R521.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	H	58.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	H	52.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	H	42.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	H	48.4	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	H	48.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	H	46.3	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	H	49.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	H	50.4	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	H	43.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	H	50.4	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	H	48.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	H	51.9	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	H	44.2	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	H	48.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	H	51.0	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	H	51.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	H	47.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	H	48.9	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	H	51.9	ug/L	0.300	1.00
78-93-3	2-Butanone	H	177	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	HU	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	H	50.7	ug/L	0.300	1.00
591-78-6	2-Hexanone	H	190	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	H	47.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	H	52.9	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	H	225	ug/L	1.50	5.00
67-64-1	Acetone	H	145	ug/L	3.00	10.0
75-05-8	Acetonitrile	H	1050	ug/L	8.00	25.0
107-02-8	Acrolein	HU	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	HU	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	HU	5.00	ug/L	1.50	5.00
71-43-2	Benzene	H	50.1	ug/L	0.300	1.00
108-86-1	Bromobenzene	H	51.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane	H	54.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	H	50.4	ug/L	0.300	1.00
75-25-2	Bromoform	H	54.8	ug/L	0.300	1.00
74-83-9	Bromomethane	H	39.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide	H	251	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109628	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 20:15	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 20:15				
Data File:	062014V9\9R521.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	H	54.1	ug/L	0.300	1.00
108-90-7	Chlorobenzene	H	51.8	ug/L	0.300	1.00
75-00-3	Chloroethane	H	43.0	ug/L	0.300	1.00
67-66-3	Chloroform	H	48.1	ug/L	0.300	1.00
74-87-3	Chloromethane	H	36.9	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	H	57.2	ug/L	0.300	1.00
74-95-3	Dibromomethane	H	47.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	H	39.0	ug/L	0.300	1.00
60-29-7	Ethyl ether	H	46.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	HU	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	H	52.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	H	58.5	ug/L	0.300	1.00
74-88-4	Iodomethane	H	266	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	HU	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	H	51.5	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	HU	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	HU	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	H	45.0	ug/L	3.00	10.0
91-20-3	Naphthalene	H	49.5	ug/L	0.400	1.00
107-12-0	Propionitrile	HU	5.00	ug/L	1.50	5.00
100-42-5	Styrene	H	57.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	H	59.6	ug/L	0.300	1.00
108-88-3	Toluene	H	50.7	ug/L	0.300	1.00
79-01-6	Trichloroethylene	H	53.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	H	48.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	HU	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate	H	231	ug/L	1.50	5.00
75-01-4	Vinyl chloride	H	39.9	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	H	48.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	H	51.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	H	112	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	H	5270	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	H	48.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	H	45.6	ug/L	0.300	1.00
95-47-6	o-Xylene	H	57.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	H	52.9	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	H	47.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	H	57.0	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109628	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 20:15	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 20:15				
Data File:	062014V9\9R521.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene	H	48.4	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	H	49.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	43.8	50.0	87.7	(78%-124%)
Bromofluorobenzene	42.5	50.0	85.1	(80%-120%)
Toluene-d8	47.4	50.0	94.7	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109629	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 21:11	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 21:11				
Data File:	062014V9\9R523.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	HU	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	HU	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	HU	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	HU	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	HU	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	HU	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	HU	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	HU	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	HU	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	HU	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	HU	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	HU	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	HU	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	EH	61.1	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	HU	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	HU	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	HU	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	HU	5.00	ug/L	1.50	5.00
67-64-1	Acetone	HU	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	HU	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	H	212	ug/L	1.50	5.00
107-13-1	Acrylonitrile	H	218	ug/L	1.00	5.00
107-05-1	Allyl chloride	H	264	ug/L	1.50	5.00
71-43-2	Benzene	HU	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	HU	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	HU	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	HU	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	HU	1.00	ug/L	0.300	1.00
74-83-9	Bromomethane	HU	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	HU	5.00	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Date Collected: 06/03/2014 11:48	Matrix: W
Lab Sample ID: 1203109629	Date Received: 06/05/2014 09:00	
Client Sample: QC for batch 1396094	Client: ARSL004	Project: QC
Client ID: CAPU-14-79431PSD	Method: SW846 8260B DOE-AL	SOP Ref: GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution: 1
Run Date: 06/20/2014 21:11	Analyst: RXY1	Purge Vol: 5 mL
Prep Date: 06/20/2014 21:11		
Data File: 062014V9\9R523.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride	HU	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	HU	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	HU	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	HU	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	HU	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	HU	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	HU	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	HU	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	HU	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	H	247	ug/L	1.50	5.00
100-41-4	Ethylbenzene	HU	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	HU	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	HU	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	H	2360	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	HU	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	H	245	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	H	251	ug/L	1.50	5.00
75-09-2	Methylene chloride	HU	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	HU	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile	H	238	ug/L	1.50	5.00
100-42-5	Styrene	HU	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	HU	1.00	ug/L	0.300	1.00
108-88-3	Toluene	HU	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	HU	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	HU	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	H	253	ug/L	1.50	5.00
108-05-4	Vinyl acetate	HU	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	HU	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	HU	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	HU	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	HU	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	HU	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	HU	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	HU	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	HU	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	HU	1.00	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether	HU	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	HU	1.00	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/03/2014 11:48	Matrix:	W
Lab Sample ID:	1203109629	Date Received:	06/05/2014 09:00		
Client Sample:	QC for batch 1396094	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79431PSD	Method:	SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID:	1396094	Inst:	VOA9.I	Dilution:	1
Run Date:	06/20/2014 21:11	Analyst:	RXY1	Purge Vol:	5 mL
Prep Date:	06/20/2014 21:11				
Data File:	062014V9\9R523.D	Column:	DB-624		

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	43.9	50.0	ug/L 87.8	(78%-124%)
Bromofluorobenzene	47.0	50.0	ug/L 94.1	(80%-120%)
Toluene-d8	46.4	50.0	ug/L 92.8	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109630		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/19/2014 08:19	Analyst:	RXY1
Prep Date:	06/19/2014 08:19	Purge Vol:	5 mL
Data File:	061914V9\9R403L3.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		57.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		49.6	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		46.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		50.0	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		45.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		46.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		54.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		48.6	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		55.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.4	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		47.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		48.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		49.1	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		48.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.8	ug/L	0.300	1.00
78-93-3	2-Butanone		302	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		47.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		320	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		44.6	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		49.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		280	ug/L	1.50	5.00
67-64-1	Acetone		337	ug/L	2.50	10.0
75-05-8	Acetonitrile		1250	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		48.3	ug/L	0.300	1.00
108-86-1	Bromobenzene		50.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		55.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.8	ug/L	0.300	1.00
75-25-2	Bromoform		61.1	ug/L	0.300	1.00
74-83-9	Bromomethane		41.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		232	ug/L	1.50	5.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109630		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/19/2014 08:19	Analyst:	RXY1
Prep Date:	06/19/2014 08:19	Purge Vol:	5 mL
Data File:	061914V9\9R403L3.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		50.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.8	ug/L	0.300	1.00
75-00-3	Chloroethane		42.0	ug/L	0.300	1.00
67-66-3	Chloroform		46.3	ug/L	0.300	1.00
74-87-3	Chloromethane		37.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		58.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		49.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		39.7	ug/L	0.300	1.00
60-29-7	Ethyl ether		50.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		48.9	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		53.9	ug/L	0.300	1.00
74-88-4	Iodomethane		253	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.8	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		43.7	ug/L	1.70	10.0
91-20-3	Naphthalene		57.4	ug/L	0.600	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		55.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		54.6	ug/L	0.300	1.00
108-88-3	Toluene		46.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		49.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		316	ug/L	1.50	5.00
75-01-4	Vinyl chloride		40.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		46.9	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		55.6	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		105	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		6670	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		45.1	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		42.4	ug/L	0.300	1.00
95-47-6	o-Xylene		53.9	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.7	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		53.7	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		50.9	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109630		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/19/2014 08:19	Analyst:	RXY1
Prep Date:	06/19/2014 08:19	Purge Vol:	5 mL
Data File:	061914V9\9R403L3.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		45.0	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	47.4	50.0	ug/L 94.8	(78%-124%)
Bromofluorobenzene	43.0	50.0	ug/L 86.1	(80%-120%)
Toluene-d8	45.2	50.0	ug/L 90.4	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109631	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: LCS for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/19/2014 09:16	Analyst: RXY1
Prep Date: 06/19/2014 09:16	Purge Vol: 5 mL
Data File: 061914V9\9R405L3.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		50.3	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		182	ug/L	1.50	5.00
107-13-1	Acrylonitrile		220	ug/L	1.50	5.00
107-05-1	Allyl chloride		210	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: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109631	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: LCS for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/19/2014 09:16	Analyst: RXY1
Prep Date: 06/19/2014 09:16	Purge Vol: 5 mL
Data File: 061914V9\9R405L3.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		236	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		2580	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		241	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		248	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	1.00
107-12-0	Propionitrile		258	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		194	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:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109631		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/19/2014 09:16	Analyst:	RXY1
Prep Date:	06/19/2014 09:16	Purge Vol:	5 mL
Data File:	061914V9\9R405L3.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	47.0	50.0	93.9	(78%-124%)
Bromofluorobenzene	46.8	50.0	93.6	(80%-120%)
Toluene-d8	46.0	50.0	92.0	(80%-120%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109632		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/20/2014 13:14	Analyst:	RXY1
Prep Date:	06/20/2014 13:14	Purge Vol:	5 mL
Data File:	062014V9\9R506L.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		45.8	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		42.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		40.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		44.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.4	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		43.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		52.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		45.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		48.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		41.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.9	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		47.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		48.0	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		49.0	ug/L	0.300	1.00
78-93-3	2-Butanone		247	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		268	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		44.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		48.5	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		239	ug/L	1.50	5.00
67-64-1	Acetone		286	ug/L	2.50	10.0
75-05-8	Acetonitrile		1020	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		45.4	ug/L	0.300	1.00
108-86-1	Bromobenzene		49.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		48.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		47.3	ug/L	0.300	1.00
75-25-2	Bromoform		55.8	ug/L	0.300	1.00
74-83-9	Bromomethane		37.3	ug/L	0.300	1.00
75-15-0	Carbon disulfide		219	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500		Matrix:	GROUND WATER
Lab Sample ID: 1203109632			
Client Sample: QC for batch 1396094	Client: ARSL004	Project:	QC
Client ID: LCS for batch 1396094	Method: SW846 8260B DOE-AL	SOP Ref:	GL-OA-E-038
Batch ID: 1396094	Inst: VOA9.I	Dilution:	1
Run Date: 06/20/2014 13:14	Analyst: RXY1	Purge Vol:	5 mL
Prep Date: 06/20/2014 13:14			
Data File: 062014V9\9R506L.D	Column: DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		47.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		46.7	ug/L	0.300	1.00
75-00-3	Chloroethane		37.4	ug/L	0.300	1.00
67-66-3	Chloroform		43.3	ug/L	0.300	1.00
74-87-3	Chloromethane		33.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		44.1	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		36.4	ug/L	0.300	1.00
60-29-7	Ethyl ether		42.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		47.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		54.7	ug/L	0.300	1.00
74-88-4	Iodomethane		234	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		40.4	ug/L	1.70	10.0
91-20-3	Naphthalene		51.5	ug/L	0.600	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.1	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		52.5	ug/L	0.300	1.00
108-88-3	Toluene		45.5	ug/L	0.300	1.00
79-01-6	Trichloroethylene		47.8	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		42.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		259	ug/L	1.50	5.00
75-01-4	Vinyl chloride		36.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		43.8	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		50.1	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		101	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5350	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		44.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		42.1	ug/L	0.300	1.00
95-47-6	o-Xylene		51.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.4	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		47.4	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		51.3	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109632		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/20/2014 13:14	Analyst:	RXY1
Prep Date:	06/20/2014 13:14	Purge Vol:	5 mL
Data File:	062014V9\9R506L.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		42.8	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.0	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	43.5	50.0	87.0	(78%-124%)
Bromofluorobenzene	43.5	50.0	86.9	(80%-120%)
Toluene-d8	45.6	50.0	91.3	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2014-3500	Matrix: GROUND WATER
Lab Sample ID: 1203109633	
Client Sample: QC for batch 1396094	Client: ARSL004
Client ID: LCS for batch 1396094	Method: SW846 8260B DOE-AL
Batch ID: 1396094	Inst: VOA9.I
Run Date: 06/20/2014 14:38	Analyst: RXY1
Prep Date: 06/20/2014 14:38	Purge Vol: 5 mL
Data File: 062014V9\9R509L.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	E	60.1	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	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	2.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		228	ug/L	1.50	5.00
107-13-1	Acrylonitrile		223	ug/L	1.50	5.00
107-05-1	Allyl chloride		254	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:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109633		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/20/2014 14:38	Analyst:	RXY1
Prep Date:	06/20/2014 14:38	Purge Vol:	5 mL
Data File:	062014V9\9R509L.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		260	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2460	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		246	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		260	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.70	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.600	1.00
107-12-0	Propionitrile		257	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		249	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:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203109633		
Client Sample:	QC for batch 1396094	Client:	ARSL004
Client ID:	LCS for batch 1396094	Method:	SW846 8260B DOE-AL
Batch ID:	1396094	Inst:	VOA9.I
Run Date:	06/20/2014 14:38	Analyst:	RXY1
Prep Date:	06/20/2014 14:38	Purge Vol:	5 mL
Data File:	062014V9\9R509L.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	44.4	50.0	ug/L	88.8	(78%-124%)
Bromofluorobenzene	46.4	50.0	ug/L	92.9	(80%-120%)
Toluene-d8	46.7	50.0	ug/L	93.3	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 24-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: VOA GC/MS	Test / Method: SW846 8260B DOE-AL	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1396094	Sample Numbers: 349932002, 350053003, 350053008, 350053011, 350053019, 350053027, 350053030, 350053035, 350137001, 350137008, 350137009, 350137016, 350260005, 1203109626, 1203109627, 1203109628, 1203109629		
Potentially affected work order(s)(SDG): 349932(2014-3483),350053(2014-3494),350137(2014-3500),350260(2014-3510) Application Issues: Sample Analyzed out of Holding			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample Analyzed out of Holding: 349932 002 350053 003,008,011,019,027,030,035 350137 001,008,009,016 350260 005 QC 1203109626PS,1203109627PS, 1203109628PSD, 1203109629PSD		1. Samples were analyzed within two times the hold date. Therefore, sample date analysis was acceptable per client.	

Originator's Name:
Morgan Mickalis 24-JUN-14

Data Validator/Group Leader:
Erin Haubert 01-JUL-14

Semi-Volatile Analysis

Case Narrative

**Semi-Volatile Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3500**

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:	1393520
Prep Batch Number:	1393519

Sample Analysis

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

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203102908	Method Blank (MB)
1203102909	Laboratory Control Sample (LCS)
1203102910	349932002(WST09-14-79994) Matrix Spike (MS)
1203102911	349932002(WST09-14-79994) Matrix Spike Duplicate (MSD)

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

Preparation/Analytical Method Verification

SOP Reference

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

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

Calibration Information

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

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

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

Initial Calibration

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

CCV Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 349932002 (WST09-14-79994) was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS1203102910 (WST09-14-79994) exceeded spike recovery limits for Pyridine at 100% (SPC limits: 14.0%-94.1%), bis(2-Ethylhexyl)phthalate at 121% (SPC limits: 29.0%-120.0%), Di-n-octylphthalate at 119% (SPC limits: 25.0%-118.0%), and Benzyl alcohol at 101% (SPC limits: 31.0%-100.0%). Since there were no target analytes detected in the parent sample, the positive biases in MS spike recoveries had no adverse impact on the data and the results have been reported.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD1203102911 (WST09-14-79994) exceeded spike recovery limits for Pyridine at 97.5% (SPC limits: 14.0%-94.1%). Since Pyridine was not detected in the parent sample, the positive bias in the MSD had no adverse impact on the data and the results have been reported.

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information:

Holding Time Specifications

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

expire at midnight on the day of expiration.

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

Miscellaneous Information:

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1302222.

Manual Integrations

Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations were required in this SDG and are included with the raw data.

TIC Comment

Tentatively identified compounds (TIC) may be requested for samples 1203102908 (MB), 350137001 (CAPU-14-79429) and 350137009 (CAPU-14-79430) 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
MSD4.I	Agilent 7890A/5975C GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3500 GEL Work Order: 350137

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: 11 JUN 2014

Title: Data Validator

Sample Data Summary

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

SDG Number: 2014-3500

Lab Sample ID: 350137001

Date Collected: 06/04/2014 12:45

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1393520

Inst: MSD4.I

Dilution: 1

Run Date: 06/09/2014 16:43

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 06/06/2014 15:40

Aliquot: 960 mL

Final Volume: 1 mL

Data File: s060914.B\s4f0917.D

Column: DB-5ms

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

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

Page 2 of 2

SDG Number: 2014-3500

Lab Sample ID: 350137001

Date Collected: 06/04/2014 12:45

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD4.I

Dilution: 1

Batch ID: 1393520

Analyst: JMB3

Inj. Vol: 1 uL

Run Date: 06/09/2014 16:43

Aliquot: 960 mL

Final Volume: 1 mL

Prep Date: 06/06/2014 15:40

Column: DB-5ms

Data File: s060914.B\s4f0917.D

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	84.1	104	ug/L	80.7 (26%-129%)
2-Fluorobiphenyl	39.7	52.1	ug/L	76.3 (32%-102%)
2-Fluorophenol	53.4	104	ug/L	51.2 (10%-78%)
Nitrobenzene-d5	40.4	52.1	ug/L	77.5 (36%-125%)
Phenol-d5	33.5	104	ug/L	32.1 (10%-104%)
p-Terphenyl-d14	50.0	52.1	ug/L	95.9 (34%-135%)

Tentatively Identified Compound Summary

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

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

SDG Number: 2014-3500

Lab Sample ID: 350137009

Date Collected: 06/04/2014 10:09

Date Received: 06/06/2014 08:55

Matrix: W

Client: ARSL004

Project: ESHL00714

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD4.I

Dilution: 1

Run Date: 06/09/2014 17:12

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 06/06/2014 15:40

Aliquot: 980 mL

Final Volume: 1 mL

Data File: s060914.B\s4f0918.D

Column: DB-5ms

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

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

Page 2 of 2

SDG Number: 2014-3500

Lab Sample ID: 350137009

Date Collected: 06/04/2014 10:09

Date Received: 06/06/2014 08:55

Matrix: W

Client ID: CAPU-14-79430

Batch ID: 1393520

Run Date: 06/09/2014 17:12

Prep Date: 06/06/2014 15:40

Data File: s060914.B\s4f0918.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 980 mL

Column: DB-5ms

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
122-39-4	Diphenylamine	U	10.2	ug/L	3.06	10.2
87-68-3	Hexachlorobutadiene	U	10.2	ug/L	3.06	10.2
77-47-4	Hexachlorocyclopentadiene	U	10.2	ug/L	3.06	10.2
67-72-1	Hexachloroethane	U	10.2	ug/L	3.06	10.2
78-59-1	Isophorone	U	10.2	ug/L	3.57	10.2
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.2	ug/L	3.06	10.2
924-16-3	N-Nitrosodi-n-butylamine	U	10.2	ug/L	3.06	10.2
55-18-5	N-Nitrosodiethylamine	U	10.2	ug/L	3.06	10.2
621-64-7	N-Nitrosodi--n-propylamine	U	10.2	ug/L	3.06	10.2
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.2	ug/L	3.06	10.2
98-95-3	Nitrobenzene	U	10.2	ug/L	3.06	10.2
608-93-5	Pentachlorobenzene	U	10.2	ug/L	3.06	10.2
108-95-2	Phenol	U	10.2	ug/L	3.06	10.2
110-86-1	Pyridine	U	10.2	ug/L	3.06	10.2
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.2	ug/L	3.06	10.2
111-91-1	bis(2-Chloroethoxy)methane	U	10.2	ug/L	3.06	10.2
111-44-4	bis(2-Chloroethyl) ether	U	10.2	ug/L	3.06	10.2
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.2	ug/L	3.06	10.2
65794-96-9	m,p-Cresols	U	10.2	ug/L	3.78	10.2
99-09-2	3-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.2	ug/L	3.06	10.2
88-74-4	2-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.2	ug/L	3.06	10.2
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	77.8	102	ug/L	76.2	(26%-129%)
2-Fluorobiphenyl	35.1	51.0	ug/L	68.8	(32%-102%)
2-Fluorophenol	49.2	102	ug/L	48.2	(10%-78%)
Nitrobenzene-d5	34.8	51.0	ug/L	68.1	(36%-125%)
Phenol-d5	30.9	102	ug/L	30.3	(10%-104%)
p-Terphenyl-d14	45.1	51.0	ug/L	88.4	(34%-135%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
000084-69-5	1,2-Benzenedicarboxylic acid, bis(2-methylpropyl)	11.848	29.5	ug/L	90	NJ

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3500**Matrix Type: LIQUID**

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203102908	MB for batch 1393519	48	30	69	46	78	85
1203102909	LCS for batch 1393519	53	34	79	68	91	89
1203102910	WST09-14-79994MS	64	59	89	85	98	102
1203102911	WST09-14-79994MSD	62	56	86	82	95	97
350137001	CAPU-14-79429	51	32	78	76	81	96
350137009	CAPU-14-79430	48	30	68	69	76	88

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: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393519

Matrix: WATER

Lab Sample ID 1203102909

Instrument: MSD4.I

Analysis Date: 06/09/2014 11:44

Dilution: 1

Analyst: JMB3

Prep Batch ID:1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	29.6	59	18-75
110-86-1	LCS Pyridine	50.0	0.0	38.5	77	11-88
62-53-3	LCS Aniline	50.0	0.0	52.5	105	35-107
108-95-2	LCS Phenol	50.0	0.0	17.9	36	13-77
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	45.1	90	35-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	41.1	82	39-99
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	25.8	52	25-100
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	26.0	52	24-88
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	26.9	54	27-87
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	40.5	81	23-120
100-51-6	LCS Benzyl alcohol	50.0	0.0	42.1	84	33-90
95-48-7	LCS o-Cresol	50.0	0.0	39.4	79	32-90
65794-96-9	LCS m,p-Cresols	50.0	0.0	40.1	80	28-100
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	45.9	92	39-113
67-72-1	LCS Hexachloroethane	50.0	0.0	24.7	49	20-85
98-95-3	LCS Nitrobenzene	50.0	0.0	41.2	82	41-119
78-59-1	LCS Isophorone	50.0	0.0	48.0	96	49-133
88-75-5	LCS 2-Nitrophenol	50.0	0.0	39.7	79	42-111
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	41.2	82	43-99
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	45.2	90	44-109
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	40.5	81	45-106
65-85-0	LCS Benzoic acid	100	0.0	26.3	26	10-81

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 3

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393519

Matrix: WATER

Lab Sample ID 1203102909

Instrument: MSD4.I

Analysis Date: 06/09/2014 11:44

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	47.8	96	50-122
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	23.4	47	19-92
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	43.4	87	46-111
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	21.0	42	15-72
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	42.0	84	41-109
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	44.2	88	41-111
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	31.0	62	36-98
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	48.6	97	44-117
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	50.4	101	45-124
131-11-3	LCS Dimethylphthalate	50.0	0.0	47.8	96	53-112
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	46.9	94	52-117
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	47.8	96	45-124
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	38.9	78	19-110
132-64-9	LCS Dibenzofuran	50.0	0.0	38.8	78	45-107
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	45.5	91	45-120
84-66-2	LCS Diethylphthalate	50.0	0.0	48.5	97	51-116
100-02-7	LCS 4-Nitrophenol	50.0	0.0	17.5	35	16-77
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	41.0	82	40-114
100-01-6	LCS 4-Nitroaniline p-Nitroaniline	50.0	0.0	56.3	113	38-133
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	48.0	96	34-114
122-39-4	LCS Diphenylamine	50.0	0.0	45.5	91	47-111
122-66-7	LCS Azobenzene 1,2-Diphenylhydrazine	50.0	0.0	45.7	91	40-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 3

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393519

Matrix: WATER

Lab Sample ID 1203102909

Instrument: MSD4.I

Analysis Date: 06/09/2014 11:44

Dilution: 1

Analyst: JMB3

Prep Batch ID:1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	45.0	90	41-113
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	51.2	102	49-116
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	50.0	100	40-122
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	51.1	102	37-124
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	51.8	104	33-122
123-91-1	LCS 1,4-Dioxane	50.0	0.0	27.4	55	26-73
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	46.8	94	42-106
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	26.5	53	36-95
1912-24-9	LCS Atrazine	50.0	0.0	44.9	90	47-115
92-87-5	LCS Benzidine	100	0.0	79.4	79	10-124
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	46.0	92	31-113
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	25.0	50	26-92

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 6

SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: WST09-14-79994MS

Matrix: W

Lab Sample ID 1203102910

Instrument: MSD4.I

Analysis Date: 06/09/2014 12:44

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	118	0.00 U	98.2	83	21-88
110-86-1	MS Pyridine	118	0.00 U	118	100 *	14-94
62-53-3	MS Aniline	118	0.00 U	88.7	75	24-109
108-95-2	MS Phenol	118	0.00 U	74.6	63	10-88
111-44-4	MS bis(2-Chloroethyl) ether	118	0.00 U	117	100	25-114
95-57-8	MS 2-Chlorophenol	118	0.00 U	96.5	82	31-103
541-73-1	MS 1,3-Dichlorobenzene	118	0.00 U	70.6	60	18-83
106-46-7	MS 1,4-Dichlorobenzene	118	0.00 U	72.4	62	20-86
95-50-1	MS 1,2-Dichlorobenzene	118	0.00 U	75.4	64	21-85
108-60-1	MS bis(2-Chloro-1-methylethyl)et	118	0.00 U	115	98	16-121
100-51-6	MS Benzyl alcohol	118	0.00 U	118	101 *	31-100
95-48-7	MS o-Cresol	118	0.00 U	107	91	26-97
65794-96-9	MS m,p-Cresols	118	0.00 U	119	101	24-110
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	118	0.00 U	120	102	29-116
67-72-1	MS Hexachloroethane	118	0.00 U	66.8	57	17-82
98-95-3	MS Nitrobenzene	118	0.00 U	112	95	32-126
78-59-1	MS Isophorone	118	0.00 U	126	107	36-139
88-75-5	MS 2-Nitrophenol	118	0.00 U	108	92	29-117
105-67-9	MS 2,4-Dimethylphenol	118	0.00 U	105	89	28-107
111-91-1	MS bis(2-Chloroethoxy)methane	118	0.00 U	118	100	34-112
120-83-2	MS 2,4-Dichlorophenol	118	0.00 U	104	88	34-111
65-85-0	MS Benzoic acid	235	0.00 U	126	54	10-105

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: WST09-14-79994MS

Matrix: W

Lab Sample ID 1203102910

Instrument: MSD4.I

Analysis Date: 06/09/2014 12:44

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS 4-Chloroaniline	118	0.00 U	108	92	28-123
87-68-3	MS Hexachlorobutadiene	118	0.00 U	66.3	56	11-97
59-50-7	MS Parachlorometa cresol 4-Chloro-3-methylphenol	118	0.00 U	108	92	31-119
77-47-4	MS Hexachlorocyclopentadiene	118	0.00 U	69.5	59	14-73
88-06-2	MS 2,4,6-Trichlorophenol	118	0.00 U	113	96	31-113
95-95-4	MS 2,4,5-Trichlorophenol	118	0.00 U	113	96	30-117
91-58-7	MS 2-Chloronaphthalene	118	0.00 U	97.3	83	30-97
88-74-4	MS 2-Nitroaniline o-Nitroaniline	118	0.00 U	122	104	28-122
99-09-2	MS 3-Nitroaniline m-Nitroaniline	118	0.00 U	122	103	29-125
131-11-3	MS Dimethylphthalate	118	0.00 U	125	106	41-116
606-20-2	MS 2,6-Dinitrotoluene	118	0.00 U	124	105	40-123
121-14-2	MS 2,4-Dinitrotoluene	118	0.00 U	122	103	34-126
51-28-5	MS 2,4-Dinitrophenol	118	0.00 U	98.0	83	17-110
132-64-9	MS Dibenzofuran	118	0.00 U	109	92	36-107
58-90-2	MS 2,3,4,6-Tetrachlorophenol	118	0.00 U	119	101	29-126
84-66-2	MS Diethylphthalate	118	0.00 U	125	106	41-117
100-02-7	MS 4-Nitrophenol	118	0.00 U	72.0	61	16-71
7005-72-3	MS 4-Chlorophenylphenylether	118	0.00 U	112	95	30-112
100-01-6	MS 4-Nitroaniline p-Nitroaniline	118	0.00 U	130	111	25-133
534-52-1	MS 2-Methyl-4,6-dinitrophenol	118	0.00 U	124	105	22-118
122-39-4	MS Diphenylamine	118	0.00 U	116	98	34-111
122-66-7	MS Azobenzene 1,2-Diphenylhydrazine	118	0.00 U	125	106	30-112

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: WST09-14-79994MS

Matrix: W

Lab Sample ID 1203102910

Instrument: MSD4.I

Analysis Date: 06/09/2014 12:44

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
101-55-3	MS 4-Bromophenylphenylether	118	0.00 U	122	104	32-111
84-74-2	MS Di-n-butylphthalate	118	0.00 U	134	114	35-118
85-68-7	MS Butylbenzylphthalate	118	0.00 U	138	117	29-121
117-81-7	MS bis(2-Ethylhexyl)phthalate	118	0.00 U	143	121 *	29-120
117-84-0	MS Di-n-octylphthalate	118	0.00 U	140	119 *	25-118
123-91-1	MS 1,4-Dioxane	118	0.00 U	83.5	71	26-88
930-55-2	MS N-Nitrosopyrrolidine	118	0.00 U	127	108	42-110
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	118	0.00 U	83.5	71	29-96
1912-24-9	MS Atrazine	118	0.00 U	118	100	33-121
92-87-5	MS Benzidine	235	0.00 U	156	66	10-117
91-94-1	MS 3,3'-Dichlorobenzidine	118	0.00 U	120	102	22-111
120-82-1	MS 1,2,4-Trichlorobenzene	118	0.00 U	75.4	64	20-90

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-79994MSD

Matrix: W

Lab Sample ID 1203102911

Instrument: MSD4.I

Analysis Date: 06/09/2014 13:14

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	118	0.00 U	93.9	80	21-88	4	0-30
110-86-1	MSD Pyridine	118	0.00 U	115	97 *	14-94	3	0-30
62-53-3	MSD Aniline	118	0.00 U	84.0	71	24-109	6	0-30
108-95-2	MSD Phenol	118	0.00 U	70.3	60	10-88	6	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	118	0.00 U	115	97	25-114	2	0-30
95-57-8	MSD 2-Chlorophenol	118	0.00 U	93.8	80	31-103	3	0-30
541-73-1	MSD 1,3-Dichlorobenzene	118	0.00 U	71.6	61	18-83	1	0-30
106-46-7	MSD 1,4-Dichlorobenzene	118	0.00 U	73.2	62	20-86	1	0-30
95-50-1	MSD 1,2-Dichlorobenzene	118	0.00 U	76.4	65	21-85	1	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	118	0.00 U	113	96	16-121	2	0-30
100-51-6	MSD Benzyl alcohol	118	0.00 U	116	99	31-100	2	0-30
95-48-7	MSD o-Cresol	118	0.00 U	103	88	26-97	4	0-30
65794-96-9	MSD m,p-Cresols	118	0.00 U	115	98	24-110	4	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	118	0.00 U	118	100	29-116	2	0-30
67-72-1	MSD Hexachloroethane	118	0.00 U	67.2	57	17-82	1	0-30
98-95-3	MSD Nitrobenzene	118	0.00 U	109	93	32-126	2	0-30
78-59-1	MSD Isophorone	118	0.00 U	121	103	36-139	4	0-30
88-75-5	MSD 2-Nitrophenol	118	0.00 U	106	90	29-117	2	0-30
105-67-9	MSD 2,4-Dimethylphenol	118	0.00 U	101	86	28-107	4	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	118	0.00 U	116	99	34-112	2	0-30
120-83-2	MSD 2,4-Dichlorophenol	118	0.00 U	101	86	34-111	3	0-30
65-85-0	MSD Benzoic acid	235	0.00 U	128	54	10-105	1	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-79994MSD

Matrix: W

Lab Sample ID 1203102911

Instrument: MSD4.I

Analysis Date: 06/09/2014 13:14

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	118	0.00 U	105	89	28-123	3	0-30
87-68-3	MSD Hexachlorobutadiene	118	0.00 U	66.3	56	11-97	0	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	118	0.00 U	104	89	31-119	4	0-30
77-47-4	MSD Hexachlorocyclopentadiene	118	0.00 U	70.8	60	14-73	2	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	118	0.00 U	106	90	31-113	7	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	118	0.00 U	107	91	30-117	5	0-30
91-58-7	MSD 2-Chloronaphthalene	118	0.00 U	95.9	82	30-97	1	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	118	0.00 U	120	102	28-122	2	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	118	0.00 U	120	102	29-125	2	0-30
131-11-3	MSD Dimethylphthalate	118	0.00 U	118	101	41-116	5	0-30
606-20-2	MSD 2,6-Dinitrotoluene	118	0.00 U	117	100	40-123	5	0-30
121-14-2	MSD 2,4-Dinitrotoluene	118	0.00 U	119	101	34-126	2	0-30
51-28-5	MSD 2,4-Dinitrophenol	118	0.00 U	96.8	82	17-110	1	0-30
132-64-9	MSD Dibenzofuran	118	0.00 U	106	90	36-107	3	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	118	0.00 U	115	98	29-126	3	0-30
84-66-2	MSD Diethylphthalate	118	0.00 U	120	102	41-117	4	0-30
100-02-7	MSD 4-Nitrophenol	118	0.00 U	69.8	59	16-71	3	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	118	0.00 U	107	91	30-112	4	0-30
100-01-6	MSD 4-Nitroaniline p-Nitroaniline	118	0.00 U	132	113	25-133	2	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	118	0.00 U	120	102	22-118	3	0-30
122-39-4	MSD Diphenylamine	118	0.00 U	110	93	34-111	6	0-30
122-66-7	MSD Azobenzene 1,2-Diphenylhydrazine	118	0.00 U	118	100	30-112	6	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500

Sample Type: Matrix Spike Duplicate

Client ID: WST09-14-79994MSD

Matrix: W

Lab Sample ID 1203102911

Instrument: MSD4.I

Analysis Date: 06/09/2014 13:14

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1393519

Inj. Vol: 1 uL

Batch ID: 1393520

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	118	0.00 U	115	97	32-111	6	0-30
84-74-2	MSD Di-n-butylphthalate	118	0.00 U	127	108	35-118	6	0-30
85-68-7	MSD Butylbenzylphthalate	118	0.00 U	130	111	29-121	6	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	118	0.00 U	134	114	29-120	7	0-30
117-84-0	MSD Di-n-octylphthalate	118	0.00 U	133	113	25-118	5	0-30
123-91-1	MSD 1,4-Dioxane	118	0.00 U	82.4	70	26-88	1	0-30
930-55-2	MSD N-Nitrosopyrrolidine	118	0.00 U	124	106	42-110	2	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	118	0.00 U	81.9	70	29-96	2	0-30
1912-24-9	MSD Atrazine	118	0.00 U	111	94	33-121	6	0-30
92-87-5	MSD Benzidine	235	0.00 U	152	65	10-117	2	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	118	0.00 U	109	93	22-111	9	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	118	0.00 U	77.0	65	20-90	2	0-30

Method Blank Summary

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SDG Number:	2014-3500	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393519	Instrument ID:	MSD4.I	Data File:	s060914.B\s4f0906.D
Lab Sample ID:	1203102908	Prep Date:	06/06/2014 15:40	Analyzed:	06/09/14 11:14
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 1393519	1203102909	s060914.B\s4f0907.D	06/09/14	1144
02 WST09-14-79994MS	1203102910	s060914.B\s4f0909.D	06/09/14	1244
03 WST09-14-79994MSD	1203102911	s060914.B\s4f0910.D	06/09/14	1314
04 CAPU-14-79429	350137001	s060914.B\s4f0917.D	06/09/14	1643
05 CAPU-14-79430	350137009	s060914.B\s4f0918.D	06/09/14	1712

Quality Control Data

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

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SDG Number: 2014-3500		Matrix: WATER
Lab Sample ID: 1203102908		
Client Sample: QC for batch 1393519	Client: ARSL004	Project: QC
Client ID: MB for batch 1393519	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393520	Inst: MSD4.I	Dilution: 1
Run Date: 06/09/2014 11:14	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/06/2014 15:40	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s060914.B\s4f0906.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<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**

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SDG Number: 2014-3500

Lab Sample ID: 1203102908

Client Sample: QC for batch 1393519

Client ID: MB for batch 1393519

Batch ID: 1393520

Run Date: 06/09/2014 11:14

Prep Date: 06/06/2014 15:40

Data File: s060914.B\s4f0906.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

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
122-39-4	Diphenylamine	U	10.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
78-59-1	Isophorone	U	10.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	10.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
98-95-3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol	U	10.0	ug/L	3.00	10.0
110-86-1	Pyridine	U	10.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	78.1	100	ug/L	78.1	(26%-129%)
2-Fluorobiphenyl	23.0	50.0	ug/L	45.9	(32%-102%)
2-Fluorophenol	47.6	100	ug/L	47.6	(10%-78%)
Nitrobenzene-d5	34.6	50.0	ug/L	69.1	(36%-125%)
Phenol-d5	29.7	100	ug/L	29.7	(10%-104%)
p-Terphenyl-d14	42.6	50.0	ug/L	85.2	(34%-135%)

Tentatively Identified Compound Summary

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

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

SDG Number: 2014-3500

Lab Sample ID: 1203102909

Client Sample: QC for batch 1393519

Client ID: LCS for batch 1393519

Batch ID: 1393520

Run Date: 06/09/2014 11:44

Prep Date: 06/06/2014 15:40

Data File: s060914.B\s4f0907.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

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		26.5	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		25.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		26.9	ug/L	3.00	10.0
122-66-7	Azobenzene		45.7	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		25.8	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		26.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		27.4	ug/L	3.00	10.0
58-90-2	2,3,4,6-Tetrachlorophenol		45.5	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		44.2	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		42.0	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		40.5	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		41.2	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		38.9	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		47.8	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		46.9	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		31.0	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		41.1	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		48.0	ug/L	3.00	10.0
88-75-5	2-Nitrophenol		39.7	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		46.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		45.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		43.4	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		47.8	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		41.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		17.5	ug/L	3.00	10.0
62-53-3	Aniline		52.5	ug/L	4.20	10.0
1912-24-9	Atrazine		44.9	ug/L	3.00	10.0
92-87-5	Benzidine		79.4	ug/L	3.90	10.0
65-85-0	Benzoic acid		26.3	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		42.1	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		50.0	ug/L	3.00	10.0
84-74-2	Di-n-butylphthalate		51.2	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		51.8	ug/L	3.00	10.0
132-64-9	Dibenzofuran		38.8	ug/L	3.00	10.0
84-66-2	Diethylphthalate		48.5	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		47.8	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0

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

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SDG Number: 2014-3500

Lab Sample ID: 1203102909

Client Sample: QC for batch 1393519

Client ID: LCS for batch 1393519

Batch ID: 1393520

Run Date: 06/09/2014 11:44

Prep Date: 06/06/2014 15:40

Data File: s060914.B\s4f0907.D

Matrix: WATER

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD4.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		45.5	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		23.4	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		21.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane		24.7	ug/L	3.00	10.0
78-59-1	Isophorone		48.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		29.6	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		45.9	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		46.8	ug/L	3.00	10.0
98-95-3	Nitrobenzene		41.2	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
108-95-2	Phenol		17.9	ug/L	3.00	10.0
110-86-1	Pyridine		38.5	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		40.5	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		45.2	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		45.1	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		51.1	ug/L	3.00	10.0
65794-96-9	m,p-Cresols		40.1	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		50.4	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		39.4	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		48.6	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		56.3	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	91.2	100	ug/L	91.2	(26%-129%)
2-Fluorobiphenyl	34.2	50.0	ug/L	68.3	(32%-102%)
2-Fluorophenol	53.3	100	ug/L	53.3	(10%-78%)
Nitrobenzene-d5	39.3	50.0	ug/L	78.6	(36%-125%)
Phenol-d5	33.8	100	ug/L	33.8	(10%-104%)
p-Terphenyl-d14	44.7	50.0	ug/L	89.5	(34%-135%)

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

SDG Number:	2014-3500	Date Collected:	06/02/2014 10:46	Matrix:	W
Lab Sample ID:	1203102910	Date Received:	06/04/2014 08:55		
Client Sample:	QC for batch 1393519	Client:	ARSL004	Project:	QC
Client ID:	WST09-14-79994MS	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1393520	Inst:	MSD4.I	Dilution:	1
Run Date:	06/09/2014 12:44	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	06/06/2014 15:40	Aliquot:	425 mL	Final Volume:	1 mL
Data File:	s060914.B\s4f0909.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		83.5	ug/L	7.06	23.5
120-82-1	1,2,4-Trichlorobenzene		75.4	ug/L	7.06	23.5
95-50-1	1,2-Dichlorobenzene		75.4	ug/L	7.06	23.5
122-66-7	Azobenzene		125	ug/L	7.06	23.5
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		70.6	ug/L	7.06	23.5
106-46-7	1,4-Dichlorobenzene		72.4	ug/L	7.06	23.5
123-91-1	1,4-Dioxane		83.5	ug/L	7.06	23.5
58-90-2	2,3,4,6-Tetrachlorophenol		119	ug/L	7.06	23.5
95-95-4	2,4,5-Trichlorophenol		113	ug/L	7.06	23.5
88-06-2	2,4,6-Trichlorophenol		113	ug/L	7.06	23.5
120-83-2	2,4-Dichlorophenol		104	ug/L	7.06	23.5
105-67-9	2,4-Dimethylphenol		105	ug/L	7.06	23.5
51-28-5	2,4-Dinitrophenol		98.0	ug/L	11.8	47.1
121-14-2	2,4-Dinitrotoluene		122	ug/L	7.06	23.5
606-20-2	2,6-Dinitrotoluene		124	ug/L	7.06	23.5
91-58-7	2-Chloronaphthalene		97.3	ug/L	0.965	2.35
95-57-8	2-Chlorophenol		96.5	ug/L	7.06	23.5
534-52-1	2-Methyl-4,6-dinitrophenol		124	ug/L	7.06	23.5
88-75-5	2-Nitrophenol		108	ug/L	7.06	23.5
91-94-1	3,3'-Dichlorobenzidine		120	ug/L	7.06	23.5
101-55-3	4-Bromophenylphenylether		122	ug/L	7.06	23.5
59-50-7	Parachlorometa cresol		108	ug/L	7.06	23.5
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		108	ug/L	7.76	23.5
7005-72-3	4-Chlorophenylphenylether		112	ug/L	7.06	23.5
100-02-7	4-Nitrophenol		72.0	ug/L	7.06	23.5
62-53-3	Aniline		88.7	ug/L	9.88	23.5
1912-24-9	Atrazine		118	ug/L	7.06	23.5
92-87-5	Benzidine		156	ug/L	9.18	23.5
65-85-0	Benzoic acid		126	ug/L	14.1	47.1
100-51-6	Benzyl alcohol		118	ug/L	7.06	23.5
85-68-7	Butylbenzylphthalate		138	ug/L	7.06	23.5
84-74-2	Di-n-butylphthalate		134	ug/L	7.06	23.5
117-84-0	Di-n-octylphthalate		140	ug/L	7.06	23.5
132-64-9	Dibenzofuran		109	ug/L	7.06	23.5
84-66-2	Diethylphthalate		125	ug/L	7.06	23.5
131-11-3	Dimethylphthalate		125	ug/L	7.06	23.5
88-85-7	Dinoseb	U	23.5	ug/L	7.06	23.5

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

Page 2 of 2

SDG Number: 2014-3500	Date Collected: 06/02/2014 10:46	Matrix: W
Lab Sample ID: 1203102910	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393519	Client: ARSL004	Project: QC
Client ID: WST09-14-79994MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393520	Inst: MSD4.I	Dilution: 1
Run Date: 06/09/2014 12:44	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/06/2014 15:40	Aliquot: 425 mL	Final Volume: 1 mL
Data File: s060914.B\s4f0909.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		116	ug/L	7.06	23.5
87-68-3	Hexachlorobutadiene		66.3	ug/L	7.06	23.5
77-47-4	Hexachlorocyclopentadiene		69.5	ug/L	7.06	23.5
67-72-1	Hexachloroethane		66.8	ug/L	7.06	23.5
78-59-1	Isophorone		126	ug/L	8.24	23.5
62-75-9	N-Methyl-N-nitrosomethylamine		98.2	ug/L	7.06	23.5
924-16-3	N-Nitrosodi-n-butylamine	U	23.5	ug/L	7.06	23.5
55-18-5	N-Nitrosodiethylamine	U	23.5	ug/L	7.06	23.5
621-64-7	N-Nitrosodi--n-propylamine		120	ug/L	7.06	23.5
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		127	ug/L	7.06	23.5
98-95-3	Nitrobenzene		112	ug/L	7.06	23.5
608-93-5	Pentachlorobenzene	U	23.5	ug/L	7.06	23.5
108-95-2	Phenol		74.6	ug/L	7.06	23.5
110-86-1	Pyridine		118	ug/L	7.06	23.5
108-60-1	bis(2-Chloro-1-methylethyl)ether		115	ug/L	7.06	23.5
111-91-1	bis(2-Chloroethoxy)methane		118	ug/L	7.06	23.5
111-44-4	bis(2-Chloroethyl) ether		117	ug/L	7.06	23.5
117-81-7	bis(2-Ethylhexyl)phthalate		143	ug/L	7.06	23.5
65794-96-9	m,p-Cresols		119	ug/L	8.71	23.5
99-09-2	3-Nitroaniline		122	ug/L	7.06	23.5
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		107	ug/L	7.06	23.5
88-74-4	2-Nitroaniline		122	ug/L	7.06	23.5
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		130	ug/L	7.06	23.5
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	231	235	ug/L 98.3	(26%-129%)
2-Fluorobiphenyl	99.5	118	ug/L 84.5	(32%-102%)
2-Fluorophenol	150	235	ug/L 63.9	(10%-78%)
Nitrobenzene-d5	104	118	ug/L 88.7	(36%-125%)
Phenol-d5	139	235	ug/L 59.0	(10%-104%)
p-Terphenyl-d14	120	118	ug/L 102	(34%-135%)

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

Page 1 of 2

SDG Number: 2014-3500	Date Collected: 06/02/2014 10:46	Matrix: W
Lab Sample ID: 1203102911	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393519	Client: ARSL004	Project: QC
Client ID: WST09-14-79994MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393520	Inst: MSD4.I	Dilution: 1
Run Date: 06/09/2014 13:14	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/06/2014 15:40	Aliquot: 425 mL	Final Volume: 1 mL
Data File: s060914.B\s4f0910.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		81.9	ug/L	7.06	23.5
120-82-1	1,2,4-Trichlorobenzene		77.0	ug/L	7.06	23.5
95-50-1	1,2-Dichlorobenzene		76.4	ug/L	7.06	23.5
122-66-7	Azobenzene		118	ug/L	7.06	23.5
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		71.6	ug/L	7.06	23.5
106-46-7	1,4-Dichlorobenzene		73.2	ug/L	7.06	23.5
123-91-1	1,4-Dioxane		82.4	ug/L	7.06	23.5
58-90-2	2,3,4,6-Tetrachlorophenol		115	ug/L	7.06	23.5
95-95-4	2,4,5-Trichlorophenol		107	ug/L	7.06	23.5
88-06-2	2,4,6-Trichlorophenol		106	ug/L	7.06	23.5
120-83-2	2,4-Dichlorophenol		101	ug/L	7.06	23.5
105-67-9	2,4-Dimethylphenol		101	ug/L	7.06	23.5
51-28-5	2,4-Dinitrophenol		96.8	ug/L	11.8	47.1
121-14-2	2,4-Dinitrotoluene		119	ug/L	7.06	23.5
606-20-2	2,6-Dinitrotoluene		117	ug/L	7.06	23.5
91-58-7	2-Chloronaphthalene		95.9	ug/L	0.965	2.35
95-57-8	2-Chlorophenol		93.8	ug/L	7.06	23.5
534-52-1	2-Methyl-4,6-dinitrophenol		120	ug/L	7.06	23.5
88-75-5	2-Nitrophenol		106	ug/L	7.06	23.5
91-94-1	3,3'-Dichlorobenzidine		109	ug/L	7.06	23.5
101-55-3	4-Bromophenylphenylether		115	ug/L	7.06	23.5
59-50-7	Parachlorometa cresol		104	ug/L	7.06	23.5
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		105	ug/L	7.76	23.5
7005-72-3	4-Chlorophenylphenylether		107	ug/L	7.06	23.5
100-02-7	4-Nitrophenol		69.8	ug/L	7.06	23.5
62-53-3	Aniline		84.0	ug/L	9.88	23.5
1912-24-9	Atrazine		111	ug/L	7.06	23.5
92-87-5	Benzidine		152	ug/L	9.18	23.5
65-85-0	Benzoic acid		128	ug/L	14.1	47.1
100-51-6	Benzyl alcohol		116	ug/L	7.06	23.5
85-68-7	Butylbenzylphthalate		130	ug/L	7.06	23.5
84-74-2	Di-n-butylphthalate		127	ug/L	7.06	23.5
117-84-0	Di-n-octylphthalate		133	ug/L	7.06	23.5
132-64-9	Dibenzofuran		106	ug/L	7.06	23.5
84-66-2	Diethylphthalate		120	ug/L	7.06	23.5
131-11-3	Dimethylphthalate		118	ug/L	7.06	23.5
88-85-7	Dinoseb	U	23.5	ug/L	7.06	23.5

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

Page 2 of 2

SDG Number: 2014-3500	Date Collected: 06/02/2014 10:46	Matrix: W
Lab Sample ID: 1203102911	Date Received: 06/04/2014 08:55	
Client Sample: QC for batch 1393519	Client: ARSL004	Project: QC
Client ID: WST09-14-79994MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1393520	Inst: MSD4.I	Dilution: 1
Run Date: 06/09/2014 13:14	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 06/06/2014 15:40	Aliquot: 425 mL	Final Volume: 1 mL
Data File: s060914.B\s4f0910.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
122-39-4	Diphenylamine		110	ug/L	7.06	23.5
87-68-3	Hexachlorobutadiene		66.3	ug/L	7.06	23.5
77-47-4	Hexachlorocyclopentadiene		70.8	ug/L	7.06	23.5
67-72-1	Hexachloroethane		67.2	ug/L	7.06	23.5
78-59-1	Isophorone		121	ug/L	8.24	23.5
62-75-9	N-Methyl-N-nitrosomethylamine		93.9	ug/L	7.06	23.5
924-16-3	N-Nitrosodi-n-butylamine	U	23.5	ug/L	7.06	23.5
55-18-5	N-Nitrosodiethylamine	U	23.5	ug/L	7.06	23.5
621-64-7	N-Nitrosodi--n-propylamine		118	ug/L	7.06	23.5
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		124	ug/L	7.06	23.5
98-95-3	Nitrobenzene		109	ug/L	7.06	23.5
608-93-5	Pentachlorobenzene	U	23.5	ug/L	7.06	23.5
108-95-2	Phenol		70.3	ug/L	7.06	23.5
110-86-1	Pyridine		115	ug/L	7.06	23.5
108-60-1	bis(2-Chloro-1-methylethyl)ether		113	ug/L	7.06	23.5
111-91-1	bis(2-Chloroethoxy)methane		116	ug/L	7.06	23.5
111-44-4	bis(2-Chloroethyl) ether		115	ug/L	7.06	23.5
117-81-7	bis(2-Ethylhexyl)phthalate		134	ug/L	7.06	23.5
65794-96-9	m,p-Cresols		115	ug/L	8.71	23.5
99-09-2	3-Nitroaniline		120	ug/L	7.06	23.5
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		103	ug/L	7.06	23.5
88-74-4	2-Nitroaniline		120	ug/L	7.06	23.5
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		132	ug/L	7.06	23.5
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	224	235	ug/L	95.1	(26%-129%)
2-Fluorobiphenyl	96.0	118	ug/L	81.6	(32%-102%)
2-Fluorophenol	147	235	ug/L	62.4	(10%-78%)
Nitrobenzene-d5	102	118	ug/L	86.4	(36%-125%)
Phenol-d5	133	235	ug/L	56.5	(10%-104%)
p-Terphenyl-d14	115	118	ug/L	97.4	(34%-135%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr. 09-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: SEMIVOA GC/MS	Test / Method: SW846 3510C/8270D	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1393520	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349932(2014-3483),350053(2014-3494),350128(2014-3501),350137(2014-3500) Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The MS(1203102910) and MSD(1203102911) exceeded spike recovery limits for Pyridine at 100% and 97.5%, respectively (SPC limits: 14.0%-94.1%). Additionally, the MS exceeded spike recovery limits for bis(2-Ethylhexyl)phthalate at 121% (SPC limits: 29.0%-120.0%), Di-n-octylphthalate at 119% (SPC limits: 25.0%-118.0%), and Benzyl alcohol at 101% (SPC limits: 31.0%-100.0%).		1. Since there were no target analytes detected in the parent sample, the positive biases in MS and MSD spike recoveries had no adverse impact on the data and the results have been reported.	

Originator's Name:

Josh Brooks 10-JUN-14

Data Validator/Group Leader:

Barbara Bailey 10-JUN-14

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-3500

Method/Analysis Information

Procedure: **Polynuclear Aromatic Hydrocarbons**

Analytical Method: SW846 8310

Prep Method: SW846 3510C

Analytical Batch Number: 1394138

Prep Batch Number: 1394132

Sample Analysis

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

Sample ID	Client ID
350137003	CAPU-14-79429
350137011	CAPU-14-79430
1203104426	Method Blank (MB)
1203104427	Laboratory Control Sample (LCS)
1203104428	350137003(CAPU-14-79429)
	Matrix Spike (MS)
1203104430	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 standard(s) (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

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

Client sample 350137003 (CAPU-14-79429) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Technical Information:

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

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 have required manual integrations due to software limitations. Please see the raw data in the Miscellaneous Section.

Additional Comments

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

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 C, or 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: 2014-3500 GEL Work Order: 350137

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: Patricia Steele

Date: 27 JUN 2014

Title: Data Validator

Roadmap for ARSL 2014-3500 HPLC_PAH

This roadmap was analyzed by cww on 06-17-2014, 12:31.

This roadmap was reviewed by ps on 06-27-2014, 15:16.

This roadmap was packaged by ps on 06-27-2014, 16:43.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1238.d	350137003	13-JUN-2014	10:23	2014-3500.sub	CAPU-14-79429	1	1394138	<input type="text"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1240.d	350137011	13-JUN-2014	11:47	2014-3500.sub	CAPU-14-79430	1	1394138	<input type="text"/>

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1227A.d	1203104426	mb	13-JUN-2014	02:38	2014-3500.sub	PAHBLK01	1	1394138	<input type="text"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1228A.d	1203104427	lcs	13-JUN-2014	03:21	2014-3500.sub	PAHBLK01LCS	1	1394138	<input type="text" value="Pass"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1239.d	1203104428	ms	13-JUN-2014	11:05	2014-3500.sub	CAPU-14-79429MS	1	1394138	<input type="text" value="Pass"/>
<input type="checkbox"/>	N	/chem/hplce.i/p061214.b/ph5f1229A.d	1203104430	lcsd	13-JUN-2014	04:03	2014-3500.sub	PAHBLK01LCSD	1	1394138	<input type="text" value="Pass"/>

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500	Date Collected: 06/04/2014 12:45	Matrix: W
Lab Sample ID: 350137003	Date Received: 06/06/2014 08:55	
Client Sample: PAH	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79429	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1394138	Inst: HPLCE.I	Dilution: 1
Run Date: 06/13/2014 10:23	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 06/09/2014 07:15	Aliquot: 970 mL	Final Volume: 1 mL
Data File: ph5f1238.d	Column: C-18, DAD/FLD	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.515	ug/L	0.225	0.515
91-57-6	2-Methylnaphthalene	U	0.515	ug/L	0.155	0.515
83-32-9	Acenaphthene	U	0.515	ug/L	0.155	0.515
208-96-8	Acenaphthylene	U	0.515	ug/L	0.155	0.515
120-12-7	Anthracene	U	0.515	ug/L	0.155	0.515
56-55-3	Benzo(a)anthracene	U	0.0515	ug/L	0.0165	0.0515
50-32-8	Benzo(a)pyrene	U	0.0515	ug/L	0.0165	0.0515
205-99-2	Benzo(b)fluoranthene	U	0.0515	ug/L	0.0165	0.0515
191-24-2	Benzo(ghi)perylene	J	0.0187	ug/L	0.0165	0.0515
207-08-9	Benzo(k)fluoranthene	J	0.0116	ug/L	0.00825	0.0258
218-01-9	Chrysene	U	0.0515	ug/L	0.0165	0.0515
53-70-3	Dibenzo(a,h)anthracene	J	0.0216	ug/L	0.0165	0.0515
206-44-0	Fluoranthene	U	0.0515	ug/L	0.0165	0.0515
86-73-7	Fluorene	U	0.515	ug/L	0.155	0.515
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.0515	ug/L	0.0165	0.0515
91-20-3	Naphthalene	U	0.515	ug/L	0.155	0.515
85-01-8	Phenanthrene	U	0.515	ug/L	0.188	0.515
129-00-0	Pyrene	U	0.0515	ug/L	0.0165	0.0515

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	155	258	60.2	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500	Date Collected: 06/04/2014 10:09	Matrix: W
Lab Sample ID: 350137011	Date Received: 06/06/2014 08:55	
Client Sample: PAH	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79430	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1394138	Inst: HPLCE.I	Dilution: 1
Run Date: 06/13/2014 11:47	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 06/09/2014 07:15	Aliquot: 950 mL	Final Volume: 1 mL
Data File: ph5f1240.d	Column: C-18, DAD/FLD	Level: LOW

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	123	263	46.6	(21% -96%)

QC Summary

PAH by HPLC
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3500

Matrix Type: LIQUID

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

Sample ID	Client ID	DFBF %REC
1203104426	MB for batch 1394132	62
1203104427	LCS for batch 1394132	60
1203104430	LCSD for batch 1394132	59
350137003	CAPU-14-79429	60
1203104428	CAPU-14-79429MS	56
350137011	CAPU-14-79430	47

Surrogate

Acceptance Limits

DFBF = Decafluorobiphenyl

(21%-96%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394132

Matrix: WATER

Lab Sample ID 1203104427

Instrument: HPLCE.I

Analysis Date: 06/13/2014 03:21

Dilution: 1

Analyst: CWW

Prep Batch ID: 1394132

Inj. Vol: 20 uL

Batch ID: 1394138

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	36.5	73	54-108
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	42.3	85	50-91
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	39.4	79	55-96
208-96-8	LCS Acenaphthylene	50.0	0.0	40.4	81	52-100
83-32-9	LCS Acenaphthene	50.0	0.0	43.3	87	53-107
86-73-7	LCS Fluorene	50.0	0.0	41.8	84	62-130
85-01-8	LCS Phenanthrene	50.0	0.0	41.8	84	69-130
120-12-7	LCS Anthracene	50.0	0.0	42.8	86	70-130
206-44-0	LCS Fluoranthene	5.00	0.0	4.04	81	70-130
129-00-0	LCS Pyrene	5.00	0.0	4.19	84	70-130
56-55-3	LCS Benzo(a)anthracene	5.00	0.0	4.22	84	70-130
218-01-9	LCS Chrysene	5.00	0.0	4.30	86	70-130
205-99-2	LCS Benzo(b)fluoranthene	5.00	0.0	4.08	82	70-130
207-08-9	LCS Benzo(k)fluoranthene	2.50	0.0	2.22	89	70-130
50-32-8	LCS Benzo(a)pyrene	5.00	0.0	4.21	84	70-130
193-39-5	LCS Indeno(1,2,3-cd)pyrene	5.00	0.0	4.33	87	57-114
53-70-3	LCS Dibenzo(a,h)anthracene	5.00	0.0	3.83	77	30-118
191-24-2	LCS Benzo(ghi)perylene	5.00	0.0	3.48	70	42-115

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394132

Matrix: WATER

Lab Sample ID 1203104430

Instrument: HPLCE.I

Analysis Date: 06/13/2014 04:03

Dilution: 1

Analyst: CWW

Prep Batch ID: 1394132

Inj. Vol: 20 uL

Batch ID: 1394138

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	35.9	72	54-108	2	0-26
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	41.2	82	50-91	2	0-20
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	38.3	77	55-96	3	0-20
208-96-8	LCSD Acenaphthylene	50.0	0.0	38.7	77	52-100	4	0-20
83-32-9	LCSD Acenaphthene	50.0	0.0	41.4	83	53-107	4	0-20
86-73-7	LCSD Fluorene	50.0	0.0	40.8	82	62-130	2	0-20
85-01-8	LCSD Phenanthrene	50.0	0.0	41.3	83	69-130	1	0-20
120-12-7	LCSD Anthracene	50.0	0.0	43.5	87	70-130	2	0-20
206-44-0	LCSD Fluoranthene	5.00	0.0	4.00	80	70-130	1	0-20
129-00-0	LCSD Pyrene	5.00	0.0	4.15	83	70-130	1	0-20
56-55-3	LCSD Benzo(a)anthracene	5.00	0.0	4.12	82	70-130	2	0-20
218-01-9	LCSD Chrysene	5.00	0.0	4.37	87	70-130	1	0-20
205-99-2	LCSD Benzo(b)fluoranthene	5.00	0.0	4.07	81	70-130	0	0-20
207-08-9	LCSD Benzo(k)fluoranthene	2.50	0.0	2.20	88	70-130	1	0-20
50-32-8	LCSD Benzo(a)pyrene	5.00	0.0	4.17	83	70-130	1	0-20
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	5.00	0.0	4.29	86	57-114	1	0-20
53-70-3	LCSD Dibenzo(a,h)anthracene	5.00	0.0	3.46	69	30-118	10	0-20
191-24-2	LCSD Benzo(ghi)perylene	5.00	0.0	3.26	65	42-115	6	0-20

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: CAPU-14-79429MS

Matrix: W

Lab Sample ID 1203104428

Instrument: HPLCE.I

Analysis Date: 06/13/2014 11:05

Dilution: 1

Analyst: CWW

Prep Batch ID: 1394132

Inj. Vol: 20 uL

Batch ID: 1394138

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
207-08-9	MS Benzo(k)fluoranthene	2.63	0.0116 J	2.08	79	28-134
53-70-3	MS Dibenzo(a,h)anthracene	5.26	0.0216 J	4.30	81	25-133
191-24-2	MS Benzo(ghi)perylene	5.26	0.0187 J	3.66	69	27-140
91-20-3	MS Naphthalene	52.6	0.00 U	34.1	65	32-104
91-57-6	MS 2-Methylnaphthalene	52.6	0.00 U	39.2	74	56-130
90-12-0	MS 1-Methylnaphthalene	52.6	0.00 U	36.1	69	46-130
208-96-8	MS Acenaphthylene	52.6	0.00 U	36.3	69	26-121
83-32-9	MS Acenaphthene	52.6	0.00 U	39.0	74	27-118
86-73-7	MS Fluorene	52.6	0.00 U	39.0	74	29-123
85-01-8	MS Phenanthrene	52.6	0.00 U	39.8	76	35-126
120-12-7	MS Anthracene	52.6	0.00 U	41.7	79	36-122
206-44-0	MS Fluoranthene	5.26	0.00 U	3.79	72	32-134
129-00-0	MS Pyrene	5.26	0.00 U	3.93	75	32-134
56-55-3	MS Benzo(a)anthracene	5.26	0.00 U	3.93	75	35-129
218-01-9	MS Chrysene	5.26	0.00 U	4.11	78	25-141
205-99-2	MS Benzo(b)fluoranthene	5.26	0.00 U	3.82	73	29-133
50-32-8	MS Benzo(a)pyrene	5.26	0.00 U	3.95	75	25-135
193-39-5	MS Indeno(1,2,3-cd)pyrene	5.26	0.00 U	4.08	78	25-135

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3500	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394132	Instrument ID:	HPLCE.I	Data File:	ph5f1227.d
Lab Sample ID:	1203104426	Prep Date:	06/09/2014 07:15	Analyzed:	06/13/14 02:38
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 1394132	1203104427	ph5f1228.d	06/13/14	0321
02 LCSD for batch 1394132	1203104430	ph5f1229.d	06/13/14	0403
03 CAPU-14-79429	350137003	ph5f1238.d	06/13/14	1023
04 CAPU-14-79429MS	1203104428	ph5f1239.d	06/13/14	1105
05 CAPU-14-79430	350137011	ph5f1240.d	06/13/14	1147

QC Data

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3500	Matrix: WATER
Lab Sample ID: 1203104426	
Client Sample: QC for batch 1394132	Client: ARSL004
Client ID: MB for batch 1394132	Method: SW846 8310
Batch ID: 1394138	Inst: HPLCE.I
Run Date: 06/13/2014 02:38	Analyst: CWW
Prep Date: 06/09/2014 07:15	Aliquot: 1000 mL
Data File: ph5f1227.d	Column: C-18, DAD/FLD
	Project: QC
	SOP Ref: GL-OA-E-030
	Dilution: 1
	Inj. Vol: 20 uL
	Final Volume: 1 mL
	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	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	156	250	62.3	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500

Lab Sample ID: 1203104427

Client Sample: QC for batch 1394132

Client ID: LCS for batch 1394132

Batch ID: 1394138

Run Date: 06/13/2014 03:21

Prep Date: 06/09/2014 07:15

Data File: ph5f1228.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		39.4	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		42.3	ug/L	0.150	0.500
83-32-9	Acenaphthene		43.3	ug/L	0.150	0.500
208-96-8	Acenaphthylene		40.4	ug/L	0.150	0.500
120-12-7	Anthracene		42.8	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.22	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.21	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.08	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		3.48	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.22	ug/L	0.008	0.025
218-01-9	Chrysene		4.30	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		3.83	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.04	ug/L	0.016	0.050
86-73-7	Fluorene		41.8	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		4.33	ug/L	0.016	0.050
91-20-3	Naphthalene		36.5	ug/L	0.150	0.500
85-01-8	Phenanthrene		41.8	ug/L	0.182	0.500
129-00-0	Pyrene		4.19	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	151	250	60.2	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500	Matrix: WATER
Lab Sample ID: 1203104430	
Client Sample: QC for batch 1394132	Client: ARSL004
Client ID: LCSD for batch 1394132	Method: SW846 8310
Batch ID: 1394138	Inst: HPLCE.I
Run Date: 06/13/2014 04:03	Analyst: CWW
Prep Date: 06/09/2014 07:15	Aliquot: 1000 mL
Data File: ph5f1229.d	Column: C-18, DAD/FLD
	Project: QC
	SOP Ref: GL-OA-E-030
	Dilution: 1
	Inj. Vol: 20 uL
	Final Volume: 1 mL
	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		38.3	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		41.2	ug/L	0.150	0.500
83-32-9	Acenaphthene		41.4	ug/L	0.150	0.500
208-96-8	Acenaphthylene		38.7	ug/L	0.150	0.500
120-12-7	Anthracene		43.5	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.12	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		4.17	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		4.07	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		3.26	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		2.20	ug/L	0.008	0.025
218-01-9	Chrysene		4.37	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		3.46	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.00	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		4.29	ug/L	0.016	0.050
91-20-3	Naphthalene		35.9	ug/L	0.150	0.500
85-01-8	Phenanthrene		41.3	ug/L	0.182	0.500
129-00-0	Pyrene		4.15	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	148	250	59.0	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500	Date Collected: 06/04/2014 12:45	Matrix: W
Lab Sample ID: 1203104428	Date Received: 06/06/2014 08:55	
Client Sample: QC for batch 1394132	Client: ARSL004	Project: QC
Client ID: CAPU-14-79429MS	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1394138	Inst: HPLCE.I	Dilution: 1
Run Date: 06/13/2014 11:05	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 06/09/2014 07:15	Aliquot: 950 mL	Final Volume: 1 mL
Data File: ph5f1239.d	Column: C-18, DAD/FLD	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		36.1	ug/L	0.229	0.526
91-57-6	2-Methylnaphthalene		39.2	ug/L	0.158	0.526
83-32-9	Acenaphthene		39.0	ug/L	0.158	0.526
208-96-8	Acenaphthylene		36.3	ug/L	0.158	0.526
120-12-7	Anthracene		41.7	ug/L	0.158	0.526
56-55-3	Benzo(a)anthracene		3.93	ug/L	0.0168	0.0526
50-32-8	Benzo(a)pyrene		3.95	ug/L	0.0168	0.0526
205-99-2	Benzo(b)fluoranthene		3.82	ug/L	0.0168	0.0526
191-24-2	Benzo(ghi)perylene		3.66	ug/L	0.0168	0.0526
207-08-9	Benzo(k)fluoranthene		2.08	ug/L	0.00842	0.0263
218-01-9	Chrysene		4.11	ug/L	0.0168	0.0526
53-70-3	Dibenzo(a,h)anthracene		4.30	ug/L	0.0168	0.0526
206-44-0	Fluoranthene		3.79	ug/L	0.0168	0.0526
86-73-7	Fluorene		39.0	ug/L	0.158	0.526
193-39-5	Indeno(1,2,3-cd)pyrene		4.08	ug/L	0.0168	0.0526
91-20-3	Naphthalene		34.1	ug/L	0.158	0.526
85-01-8	Phenanthrene		39.8	ug/L	0.192	0.526
129-00-0	Pyrene		3.93	ug/L	0.0168	0.0526

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	149	263	56.5	(21%-96%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International, LLC (ARSL)
SDG 2014-3500**

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: 1394191

Prep Batch Number: 1394190

Sample Analysis

Sample ID	Client ID
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203104534	Interference Check Sample (ICS)
1203104530	Method Blank (MB)
1203104531	Laboratory Control Sample (LCS)
1203104532	350053006(CAPU-14-79436) Matrix Spike (MS)
1203104533	350053006(CAPU-14-79436) 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 350053006 (CAPU-14-79436) from SDG 2014-3494 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

Sample 350137014 (CAPU-14-79438) was diluted to bring the over range concentration within the calibration range.

Sample Re-extraction/Re-analysis

Sample 350137006 (CAPU-14-79437) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

Miscellaneous Information

Data Exception (DER) Documentation

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

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

Manual Integrations

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

Method Comments

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

Additional Comments

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value.

The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred.

Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are not internally corrected for using Perchlorate-O (18). They are external calibrations.

Perchlorate Isotope Ratio

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples.

Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Perchlorate analysis. It is coupled with either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for Perchlorate analysis.

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

Electronic Packaging Comment

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

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

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

Chromatographic Columns

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2014-3500 GEL Work Order: 350137

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: 13 JUN 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79437Date Received: 06-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 350137006Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.529	ug/L		1	11-JUN-14 19:56	per0611038a
	Perchlorate Isotope Ratio			2.92			1	11-JUN-14 19:56	per0611038a
14797-73-0	Perchlorate-101	.05	.2	0.529	ug/L		1	11-JUN-14 19:56	per0611038a
	Perchlorate-O(18)			0.483	ug/L		1	11-JUN-14 19:56	per0611038a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79438Date Received: 06-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 350137014Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.2	.8	2.04	ug/L		4	11-JUN-14 20:07	per0611039a
	Perchlorate Isotope Ratio			2.94			4	11-JUN-14 20:07	per0611039a
14797-73-0	Perchlorate-101	.2	.8	2.02	ug/L		4	11-JUN-14 20:07	per0611039a
	Perchlorate-O(18)			1.88	ug/L		4	11-JUN-14 20:07	per0611039a

^ 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): 2014-3500

Extract Batch Code: 1394190

Date Filtered: 07-JUN-14

Matrix: WATER

Sample ID: 1203104531

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.194	ug/L	97.0		85 - 115
Perchlorate Isotope Ratio		2.87				-
Perchlorate-101	0.200	.197	ug/L	98.5		85 - 115
Perchlorate-O(18)		.487	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): 2014-3500

Extract Batch Code: 1394190

Date Extracted: 07-JUN-14

GEL MS/PS ID: 1203104532

Client ID: CAPU-14-79436

GEL MSD/PSD ID: 1203104533

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	0.358	ug/L	0.545	93.5	.541	91.9	.612	30	75 - 125
Perchlorate Isotope Ratio	0	2.90		2.95		2.92		1.33		-
Perchlorate-101	0.200	0.359	ug/L	0.537	88.9	.541	90.8	.716	30	75 - 125
Perchlorate-O(18)	0	0.471	ug/L	0.492		.491		.251		-

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 07-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 1203104530Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	11-JUN-14 14:57	per0611012a
	Perchlorate Isotope Ratio						1	11-JUN-14 14:57	per0611012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	11-JUN-14 14:57	per0611012a
	Perchlorate-O(18)			0.482	ug/L		1	11-JUN-14 14:57	per0611012a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 07-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 1203104531Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.194	ug/L	J	1	11-JUN-14 15:09	per0611013a
	Perchlorate Isotope Ratio			2.87			1	11-JUN-14 15:09	per0611013a
14797-73-0	Perchlorate-101	.05	.2	0.197	ug/L	J	1	11-JUN-14 15:09	per0611013a
	Perchlorate-O(18)			0.487	ug/L		1	11-JUN-14 15:09	per0611013a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2014-3500GEL Sample ID: 1203104534Date Filtered: 07-JUN-14Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.191	ug/L	J	1	11-JUN-14 15:20	per0611014a
	Perchlorate Isotope Ratio			2.96			1	11-JUN-14 15:20	per0611014a
14797-73-0	Perchlorate-101	.05	.2	0.188	ug/L	J	1	11-JUN-14 15:20	per0611014a
	Perchlorate-O(18)			0.487	ug/L		1	11-JUN-14 15:20	per0611014a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79436MSDate Received: 05-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 1203104532Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.545	ug/L		1	11-JUN-14 16:06	per0611018a
	Perchlorate Isotope Ratio			2.95			1	11-JUN-14 16:06	per0611018a
14797-73-0	Perchlorate-101	.05	.2	0.537	ug/L		1	11-JUN-14 16:06	per0611018a
	Perchlorate-O(18)			0.492	ug/L		1	11-JUN-14 16:06	per0611018a

^ 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: 1394190Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-14-79436MSDDate Received: 05-JUN-14GEL Job No (SDG): 2014-3500GEL Sample ID: 1203104533Date Filtered: 07-JUN-14Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.541	ug/L		1	11-JUN-14 16:18	per0611019a
	Perchlorate Isotope Ratio			2.92			1	11-JUN-14 16:18	per0611019a
14797-73-0	Perchlorate-101	.05	.2	0.541	ug/L		1	11-JUN-14 16:18	per0611019a
	Perchlorate-O(18)			0.491	ug/L		1	11-JUN-14 16:18	per0611019a

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

*Concentration =

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

Pesticide Analysis

Case Narrative

Pesticide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3500

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: 1393888

Prep Batch Number: 1393887

Sample Analysis

Sample ID	Client ID
350137002	CAPU-14-79429
350137007	CAPU-14-79421
350137010	CAPU-14-79430
350137015	CAPU-14-79422
1203103868	Method Blank (MB)
1203103869	Laboratory Control Sample (LCS)
1203103870	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

Samples 350137007 (CAPU-14-79421) and 350137015 (CAPU-14-79422) had a initial pH of 2.

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: 1394113

Prep Batch Number: 1394107

Sample Analysis

Sample ID	Client ID
350137004	CAPU-14-79429
350137012	CAPU-14-79430
1203104374	Method Blank (MB)
1203104375	Laboratory Control Sample (LCS)
1203104376	350137004(CAPU-14-79429) Matrix Spike (MS)
1203104384	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 calibration verification standards (CVS, ICV, or CCV) requirements have not been met for this SDG. Several target analytes 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. These target analytes were not detected above the PQL in the samples; therefore, the non-compliance has no adverse effects on the data.

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 350137004 (CAPU-14-79429) was selected for the matrix spike analysis.

Matrix Spike (MS) Recovery Statement

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

Technical Information:**Holding Time Specifications**

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

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

The following DER was generated for this SDG: 1303137.

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 required for this SDG:

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

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Qualifier Definition Report for

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

Client SDG: 2014-3500 GEL Work Order: 350137

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: 18 JUN 2014

Title: Group Leader

Sample Data Summary

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	350137002	Date Received:	06/06/2014 08:55		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79429	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393888	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/09/2014 18:50	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/09/2014 14:45	Aliquot:	35.81 mL	Final Volume:	35 mL
Data File:	060914HE\E1f0919.D	Column:	1 ZB-50		
	060914HE\E1f0919.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0195	ug/L	0.00586	0.0195	1
106-93-4	1,2-Dibromoethane	U	0.0195	ug/L	0.00586	0.0195	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.96	3.49	ug/L	114	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	350137004	Date Received:	06/06/2014 08:55		
Client Sample:	HCb	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79429	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1394113	Inst:	ECD7A.I	Dilution:	1
Run Date:	06/10/2014 18:45	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	06/09/2014 12:45	Aliquot:	990 mL	Final Volume:	5 mL
Data File:	061014.B\7f1021.D	Column:	1 CLPesticides		
	061014.B\7f1021.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0202	ug/L	0.00631	0.0202	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
4cmx		0.919	1.01	ug/L	91.0	(36%-106%)	
Decachlorobiphenyl		1.12	1.01	ug/L	111	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	350137007	Date Received:	06/06/2014 08:55		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79421	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393888	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/09/2014 19:11	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/09/2014 14:45	Aliquot:	35.99 mL	Final Volume:	35 mL
Data File:	060914HE\E1f0920.D	Column:	1 ZB-50		
	060914HE\E1f0920.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0194	ug/L	0.00583	0.0194	1
106-93-4	1,2-Dibromoethane	U	0.0194	ug/L	0.00583	0.0194	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.28	3.47	ug/L	123	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 10:09	Matrix:	W
Lab Sample ID:	350137010	Date Received:	06/06/2014 08:55		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79430	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393888	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/09/2014 19:32	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/09/2014 14:45	Aliquot:	35.79 mL	Final Volume:	35 mL
Data File:	060914HE\E1f0921.D	Column:	1 ZB-50		
	060914HE\E1f0921.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0196	ug/L	0.00587	0.0196	1
106-93-4	1,2-Dibromoethane	U	0.0196	ug/L	0.00587	0.0196	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.96	3.49	ug/L	113	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 10:09	Matrix:	W
Lab Sample ID:	350137012	Date Received:	06/06/2014 08:55		
Client Sample:	HCB	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79430	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1394113	Inst:	ECD7A.I	Dilution:	1
Run Date:	06/10/2014 19:17	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	06/09/2014 12:45	Aliquot:	970 mL	Final Volume:	5 mL
Data File:	061014.B\7f1023.D	Column:	1 CLPesticides		
	061014.B\7f1023.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene	U	0.0206	ug/L	0.00644	0.0206	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.850	1.03	ug/L	82.5	(36%-106%)
Decachlorobiphenyl	1.21	1.03	ug/L	117	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/04/2014 09:09	Matrix:	W
Lab Sample ID:	350137015	Date Received:	06/06/2014 08:55		
Client Sample:	8011	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79422	Method:	SW846 8011	SOP Ref:	GL-OA-E-059
Batch ID:	1393888	Inst:	ECD1A.I	Dilution:	1
Run Date:	06/09/2014 19:53	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/09/2014 14:45	Aliquot:	36.36 mL	Final Volume:	35 mL
Data File:	060914HE\E1f0922.D	Column:	1 ZB-50		
	060914HE\E1f0922.D		2 ZB-XLB		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0193	ug/L	0.00578	0.0193	1
106-93-4	1,2-Dibromoethane	U	0.0193	ug/L	0.00578	0.0193	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.45	3.44	ug/L	129	(73%-135%)	

Quality Control Summary

Pesticide
Surrogate Recovery Report

Page 1 of 2

SDG Number: 2014-3500**Matrix Type: LIQUID**

Sample ID	Client ID	BFB 1 %REC #	BFB 2 %REC #
1203103868	MB for batch 1393887	113	101
1203103869	LCS for batch 1393887	109	107
1203103870	LCSD for batch 1393887	110	108
350137002	CAPU-14-79429	114	98
350137007	CAPU-14-79421	123	123
350137010	CAPU-14-79430	113	99
350137015	CAPU-14-79422	129	121

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: 2014-3500**Matrix Type: LIQUID**

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203104374	MB for batch 1394107	86	79	106	102
1203104375	LCS for batch 1394107	87	84	116	113
1203104384	LCSD for batch 1394107	99	92	120	116
350137004	CAPU-14-79429	91	85	111	110
1203104376	CAPU-14-79429MS	87	82	112	109
350137012	CAPU-14-79430	82	80	116	117

Surrogate**Acceptance Limits**

4CMX = 4cmx

(36%-106%)

DCB = Decachlorobiphenyl

(41%-124%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1393887

Matrix: WATER

Lab Sample ID 1203103869

Instrument: ECD1A.I

Analysis Date: 06/09/2014 14:58

Dilution: 1

Analyst: RXE1

Prep Batch ID: 1393887

Inj. Vol: 1 uL

Batch ID: 1393888

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	0.222	111	70-130
96-12-8	LCS 1,2-Dibromo-3-chloropropane	0.200	0.0	0.218	109	70-130

Pesticide
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1393887

Matrix: WATER

Lab Sample ID 1203103870

Instrument: ECD1A.I

Analysis Date: 06/09/2014 15:19

Dilution: 1

Analyst: RXE1

Prep Batch ID:1393887

Inj. Vol: 1 uL

Batch ID: 1393888

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	0.222	111	70-130	0	0-20
96-12-8	LCSD 1,2-Dibromo-3-chloropropane	0.200	0.0	0.219	110	70-130	0	0-20

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394107

Matrix: WATER

Lab Sample ID 1203104375

Instrument: ECD7A.I

Analysis Date: 06/10/2014 15:33

Dilution: 1

Analyst: LOF

Prep Batch ID:1394107

Inj. Vol: 1 uL

Batch ID: 1394113

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	0.132	132	50-150

Pesticide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394107

Matrix: WATER

Lab Sample ID 1203104384

Instrument: ECD7A.I

Analysis Date: 06/10/2014 15:49

Dilution: 1

Analyst: LOF

Prep Batch ID:1394107

Inj. Vol: 1 uL

Batch ID: 1394113

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	0.114	114	50-150	15	0-30

Pesticide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: CAPU-14-79429MS

Matrix: W

Lab Sample ID 1203104376

Instrument: ECD7A.I

Analysis Date: 06/10/2014 19:01

Dilution: 1

Analyst: LOF

Prep Batch ID:1394107

Inj. Vol: 1 uL

Batch ID: 1394113

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	0.112	108	50-150

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3500	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1393887	Instrument ID:	ECD1A.I_1	Data File:	060914HE\E1f0907.D
Lab Sample ID:	1203103868		ECD1A.I_2		060914HE\E1f0907.D
Column:	ZB-50	Prep Date:	06/09/2014 12:00	Analyzed:	06/09/14 14:37
	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 1393887	1203103869	060914HE\E1f0908.D 060914HE\E1f0908.D	06/09/14	1458
02 LCSD for batch 1393887	1203103870	060914HE\E1f0909.D 060914HE\E1f0909.D	06/09/14	1519
03 CAPU-14-79429	350137002	060914HE\E1f0919.D 060914HE\E1f0919.D	06/09/14	1850
04 CAPU-14-79421	350137007	060914HE\E1f0920.D 060914HE\E1f0920.D	06/09/14	1911
05 CAPU-14-79430	350137010	060914HE\E1f0921.D 060914HE\E1f0921.D	06/09/14	1932
06 CAPU-14-79422	350137015	060914HE\E1f0922.D 060914HE\E1f0922.D	06/09/14	1953

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3500	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1394107	Instrument ID:	ECD7A.I_1	Data File:	061014.B\7f1008.D
Lab Sample ID:	1203104374		ECD7A.I_2		061014.B\7f1008.D
Column:	CLPesticides	Prep Date:	06/09/2014 12:45	Analyzed:	06/10/14 15:17
	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 1394107	1203104375	061014.B\7f1009.D 061014.B\7f1009.D	06/10/14	1533
02 LCSD for batch 1394107	1203104384	061014.B\7f1010.D 061014.B\7f1010.D	06/10/14	1549
03 CAPU-14-79429	350137004	061014.B\7f1021.D 061014.B\7f1021.D	06/10/14	1845
04 CAPU-14-79429MS	1203104376	061014.B\7f1022.D 061014.B\7f1022.D	06/10/14	1901
05 CAPU-14-79430	350137012	061014.B\7f1023.D 061014.B\7f1023.D	06/10/14	1917

Quality Control Data

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3500

Lab Sample ID: 1203103868

Client Sample: QC for batch 1393887

Client ID: MB for batch 1393887

Batch ID: 1393888

Run Date: 06/09/2014 14:37

Prep Date: 06/09/2014 12:00

Data File: 060914HE\E1f0907.D
060914HE\E1f0907.D

Client: ARSL004

Method: SW846 8011

Inst: ECD1A.I

Analyst: RXE1

Aliquot: 35 mL

Column: 1 ZB-50
2 ZB-XLB

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-059

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 35 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		4.04	3.57	ug/L	113	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	WATER
Lab Sample ID:	1203103869		
Client Sample:	QC for batch 1393887	Client:	ARSL004
Client ID:	LCS for batch 1393887	Method:	SW846 8011
Batch ID:	1393888	Inst:	ECD1A.I
Run Date:	06/09/2014 14:58	Analyst:	RXE1
Prep Date:	06/09/2014 12:00	Aliquot:	35 mL
Data File:	060914HE\E1f0908.D	Column:	1 ZB-50
	060914HE\E1f0908.D		2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.218	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.222	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.89	3.57	ug/L	109	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	WATER
Lab Sample ID:	1203103870		
Client Sample:	QC for batch 1393887	Client:	ARSL004
Client ID:	LCSD for batch 1393887	Method:	SW846 8011
Batch ID:	1393888	Inst:	ECD1A.I
Run Date:	06/09/2014 15:19	Analyst:	RXE1
Prep Date:	06/09/2014 12:00	Aliquot:	35 mL
Data File:	060914HE\E1f0909.D	Column:	1 ZB-50
	060914HE\E1f0909.D		2 ZB-XLB

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-12-8	1,2-Dibromo-3-chloropropane		0.219	ug/L	0.006	0.020	1
106-93-4	1,2-Dibromoethane		0.222	ug/L	0.006	0.020	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
Bromofluorobenzene		3.94	3.57	ug/L	110	(73%-135%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	WATER
Lab Sample ID:	1203104374		
Client Sample:	QC for batch 1394107	Client:	ARSL004
Client ID:	MB for batch 1394107	Method:	SW846 3535A/8081B
Batch ID:	1394113	Inst:	ECD7A.I
Run Date:	06/10/2014 15:17	Analyst:	LOF
Prep Date:	06/09/2014 12:45	Aliquot:	1000 mL
Data File:	061014.B\7f1008.D	Column:	1 CLPesticides
	061014.B\7f1008.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		0.861	1.00	ug/L	86.1	(36%-106%)	
Decachlorobiphenyl		1.06	1.00	ug/L	106	(41%-124%)	

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	WATER
Lab Sample ID:	1203104375		
Client Sample:	QC for batch 1394107	Client:	ARSL004
Client ID:	LCS for batch 1394107	Method:	SW846 3535A/8081B
Batch ID:	1394113	Inst:	ECD7A.I
Run Date:	06/10/2014 15:33	Analyst:	LOF
Prep Date:	06/09/2014 12:45	Aliquot:	1000 mL
Data File:	061014.B\7f1009.D	Column:	1 CLPesticides
	061014.B\7f1009.D		2 CLPesticides2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.132	ug/L	0.00625	0.020	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
4cmx	0.868	1.00	ug/L	86.8	(36%-106%)
Decachlorobiphenyl	1.16	1.00	ug/L	116	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	1203104376	Date Received:	06/06/2014 08:55		
Client Sample:	QC for batch 1394107	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79429MS	Method:	SW846 3535A/8081B	SOP Ref:	GL-OA-E-041
Batch ID:	1394113	Inst:	ECD7A.I	Dilution:	1
Run Date:	06/10/2014 19:01	Analyst:	LOF	Inj. Vol:	1 uL
Prep Date:	06/09/2014 12:45	Aliquot:	960 mL	Final Volume:	5 mL
Data File:	061014.B\7f1022.D	Column:	1 CLPesticides		
	061014.B\7f1022.D		2 CLPesticides2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.112	ug/L	0.00651	0.0208	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
4cmx	0.909	1.04	ug/L	87.3	(36%-106%)
Decachlorobiphenyl	1.16	1.04	ug/L	112	(41%-124%)

**Pesticide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3500

Lab Sample ID: 1203104384

Client Sample: QC for batch 1394107

Client ID: LCSD for batch 1394107

Batch ID: 1394113

Run Date: 06/10/2014 15:49

Prep Date: 06/09/2014 12:45

Data File: 061014.B\ef1010.D
061014.B\ef1010.D

Client: ARSL004

Method: SW846 3535A/8081B

Inst: ECD7A.I

Analyst: LOF

Aliquot: 1000 mL

Column: 1 CLPesticides
2 CLPesticides2

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-041

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.114	ug/L	0.00625	0.020	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
4cmx	0.990	1.00	99.0	(36%-106%)
Decachlorobiphenyl	1.20	1.00	120	(41%-124%)

Herbicide Analysis

Case Narrative

**Herbicide Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3500**

Method/Analysis Information

Procedure: Analysis of Chlorophenoxy Acid Herbicides by ECD
Analytical Method: SW846 8151A
Prep Method: SW846 8151A
Analytical Batch Number: 1394530
Prep Batch Number: 1394525

Sample Analysis

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

Sample ID	Client ID
350137005	CAPU-14-79429
350137013	CAPU-14-79430
1203105474	Method Blank (MB)
1203105475	Laboratory Control Sample (LCS)
1203105476	350260004(CAPU-14-79427) Matrix Spike (MS)
1203105478	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 analytes were not detected in the samples, the non-compliance had no adverse impact on the data. All analytes

were within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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 350260004 (CAPU-14-79427) 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)

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: 2014-3500 GEL Work Order: 350137

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: 23 JUN 2014

Title: Data Validator

Sample Data Summary

**Herbicide
Certificate of Analysis
Sample Summary**

SDG Number:	2014-3500	Date Collected:	06/04/2014 12:45	Matrix:	W
Lab Sample ID:	350137005	Date Received:	06/06/2014 08:55		
Client Sample:	PCP	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79429	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1394530	Inst:	ECD6A.I	Dilution:	1
Run Date:	06/11/2014 17:15	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/10/2014 13:30	Aliquot:	990 mL	Final Volume:	10 mL
Data File:	061114\E6f1115.D	Column:	1 CLP		
	061114\E6f1115.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.253	ug/L	0.0505	0.253	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.89	5.05	ug/L	96.8	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/04/2014 10:09	Matrix:	W
Lab Sample ID:	350137013	Date Received:	06/06/2014 08:55		
Client Sample:	PCP	Client:	ARSL004	Project:	ESHL00714
Client ID:	CAPU-14-79430	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1394530	Inst:	ECD6A.I	Dilution:	1
Run Date:	06/11/2014 17:43	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/10/2014 13:30	Aliquot:	940 mL	Final Volume:	10 mL
Data File:	061114\E6f1116.D	Column:	1 CLP		
	061114\E6f1116.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.266	ug/L	0.0532	0.266	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.12	5.32	ug/L	96.3	(43%-137%)	

Quality Control Summary

Herbicide
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3500**Matrix Type: LIQUID**

Sample ID	Client ID	DCAA 1	DCAA 2
		%REC #	%REC #
1203105474	MB for batch 1394525	83	80
1203105475	LCS for batch 1394525	90	87
1203105478	LCSD for batch 1394525	85	83
350137005	CAPU-14-79429	97	87
350137013	CAPU-14-79430	96	90
1203105476	CAPU-14-79427MS	113	131

Surrogate**Acceptance Limits**

DCAA = 2,4-Dichlorophenylacetic acid

(43%-137%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Herbicide
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1394525

Matrix: GROUND WATER

Lab Sample ID 1203105475

Instrument: ECD6A.I

Analysis Date: 06/11/2014 13:17

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394525

Inj. Vol: 1 uL

Batch ID: 1394530

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	1.75	87	55-113

Herbicide

Page 2 of 2

Quality Control Summary
Spike Recovery Report

SDG Number: 2014-3500

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1394525

Matrix: WATER

Lab Sample ID 1203105478

Instrument: ECD6A.I

Analysis Date: 06/11/2014 13:46

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394525

Inj. Vol: 1 uL

Batch ID: 1394530

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	1.57	79	55-113	11	0-30

Herbicide
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2014-3500

Sample Type: Matrix Spike

Client ID: CAPU-14-79427MS

Matrix: W

Lab Sample ID 1203105476

Instrument: ECD6A.I

Analysis Date: 06/11/2014 18:38

Dilution: 1

Analyst: RXE1

Prep Batch ID:1394525

Inj. Vol: 1 uL

Batch ID: 1394530

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS Pentachlorophenol	2.11	0.00	U	2.06	98	37-114

Method Blank Summary

Page 1 of 1

SDG Number:	2014-3500	Client:	ARSL004	Matrix:	GROUND WATER
Client ID:	MB for batch 1394525	Instrument ID:	ECD6A.I_1	Data File:	061114\E6f1105.D
Lab Sample ID:	1203105474		ECD6A.I_2		061114\E6f1105.D
Column:	CLP	Prep Date:	06/10/2014 13:30	Analyzed:	06/11/14 12:50
	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 1394525	1203105475	061114\E6f1106.D 061114\E6f1106.D	06/11/14	1317
02 LCSD for batch 1394525	1203105478	061114\E6f1107.D 061114\E6f1107.D	06/11/14	1346
03 CAPU-14-79429	350137005	061114\E6f1115.D 061114\E6f1115.D	06/11/14	1715
04 CAPU-14-79430	350137013	061114\E6f1116.D 061114\E6f1116.D	06/11/14	1743
05 CAPU-14-79427MS	1203105476	061114\E6f1118.D 061114\E6f1118.D	06/11/14	1838

Quality Control Data

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203105474		
Client Sample:	QC for batch 1394525	Client:	ARSL004
Client ID:	MB for batch 1394525	Method:	SW846 8151A
Batch ID:	1394530	Inst:	ECD6A.I
Run Date:	06/11/2014 12:50	Analyst:	RXE1
Prep Date:	06/10/2014 13:30	Aliquot:	1000 mL
Data File:	061114\E6f1105.D	Column:	1 CLP
	061114\E6f1105.D		2 CLP2

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		4.17	5.00	ug/L	83.5	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Matrix:	GROUND WATER
Lab Sample ID:	1203105475		
Client Sample:	QC for batch 1394525	Client:	ARSL004
Client ID:	LCS for batch 1394525	Method:	SW846 8151A
Batch ID:	1394530	Inst:	ECD6A.I
Run Date:	06/11/2014 13:17	Analyst:	RXE1
Prep Date:	06/10/2014 13:30	Aliquot:	1000 mL
Data File:	061114\E6f1106.D	Column:	1 CLP
	061114\E6f1106.D		2 CLP2

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.75	ug/L	0.050	0.250	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		4.49	5.00	ug/L	89.9	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number:	2014-3500	Date Collected:	06/05/2014 12:09	Matrix:	W
Lab Sample ID:	1203105476	Date Received:	06/07/2014 08:35		
Client Sample:	QC for batch 1394525	Client:	ARSL004	Project:	QC
Client ID:	CAPU-14-79427MS	Method:	SW846 8151A	SOP Ref:	GL-OA-E-011
Batch ID:	1394530	Inst:	ECD6A.I	Dilution:	1
Run Date:	06/11/2014 18:38	Analyst:	RXE1	Inj. Vol:	1 uL
Prep Date:	06/10/2014 13:30	Aliquot:	950 mL	Final Volume:	10 mL
Data File:	061114\E6f1118.D	Column:	1 CLP		
	061114\E6f1118.D		2 CLP2		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		2.06	ug/L	0.0526	0.263	1
Surrogate/Tracer recovery		Result	Nominal		Recovery%	Acceptable Limits	
2,4-Dichlorophenylacetic acid		5.93	5.26	ug/L	113	(43%-137%)	

**Herbicide
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: 2014-3500

Lab Sample ID: 1203105478

Client Sample: QC for batch 1394525

Client ID: LCSD for batch 1394525

Batch ID: 1394530

Run Date: 06/11/2014 13:46

Prep Date: 06/10/2014 13:30

Data File: 061114\E6f1107.D

061114\E6f1107.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		1.57	ug/L	0.050	0.250	1

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	4.26	5.00	85.1	(43%-137%)

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International, LLC (ARSL)
SDG 2014-3500**

Sample Analysis

Sample ID	Client ID
350137001	CAPU-14-79429
350137006	CAPU-14-79437
350137009	CAPU-14-79430
350137014	CAPU-14-79438
1203104401	Method Blank (MB) ICP
1203104402	Laboratory Control Sample (LCS)
1203104406	350137006(CAPU-14-79437L) Serial Dilution (SD)
1203104403	350137006(CAPU-14-79437D) Sample Duplicate (DUP)
1203104404	350137006(CAPU-14-79437S) Matrix Spike (MS)
1203104336	Method Blank (MB) ICP-MS
1203104337	Laboratory Control Sample (LCS)
1203104340	350137006(CAPU-14-79437L) Serial Dilution (SD)
1203104338	350137006(CAPU-14-79437D) Sample Duplicate (DUP)
1203104339	350137006(CAPU-14-79437S) Matrix Spike (MS)
1203110252	Method Blank (MB) CVAA
1203110253	Laboratory Control Sample (LCS)
1203110264	350053003(CAPU-14-79428L) Serial Dilution (SD)
1203110257	350053003(CAPU-14-79428D) Sample Duplicate (DUP)
1203110258	350053003(CAPU-14-79428S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1394123, 1394090, 1396344 and 1399077
Prep Batch :	1394122, 1394089 and 1396342
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 10, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 27 and GL-GC-E-107 REV# 9

Analytical Method: SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.1/245.2 and SM 2340 B

Prep Method : SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with an ESI SC-FAST introduction, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 0.4L/min, argon gas flows of 13 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

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

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

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

Calibration Information

Instrument Calibration

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

CRDL/PQL Requirements

The CRDL/PQL 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 Blanks (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

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

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 350137006 (CAPU-14-79437)-ICP and ICP-MS and 350053003 (CAPU-14-79428)-CVAA.

Matrix Spike (MS) Recovery Statement

The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. All applicable analytes met the acceptance criteria.

Duplicate Relative Percent Difference (RPD) Statement

The RPD obtained from the designated sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is >5X the contract required reporting limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control of +/-RL is used to evaluate the DUP results. All applicable analytes met these requirements.

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established acceptance percent difference criteria.

Technical Information**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. Samples 350137006 (CAPU-14-79437) and 350137014 (CAPU-14-79438)-ICP were diluted for tin in order to minimize suppression due to matrix interferences.

Preparation Information

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

Miscellaneous Information**Electronic Packaging Comment**

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

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

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. Data exception reports were included behind the Case Narrative or in the Miscellaneous Data section of this data package. A data exception report was not required for this SDG.

Additional Comments

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

Hardness = 2.497 (Ca) + 4.118 (Mg)

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

Certification Statement

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

Review Validation:

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

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

Reviewer: Pat Steele Date: 07/03/2014

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: 2014-3500 GEL Work Order: 350137

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

Pat Steele 07/03/2014

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:** EPA

SAMPLE ID: 350137001 **BASIS:** As Received **DATE COLLECTED** 04-JUN-14
CLIENT ID: CAPU-14-79429 **LEVEL:** Low **DATE RECEIVED** 06-JUN-14
MATRIX: W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 17:28	061814W2-6	1396344

Prep Information:

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 350137006**BASIS:** As Received**DATE COLLECTED** 04-JUN-14**CLIENT ID:** CAPU-14-79437**LEVEL:** Low**DATE RECEIVED** 06-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 17:30	061814W2-6	1396344

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 350137006

BASIS: As Received

DATE COLLECTED 04-JUN-14

CLIENT ID: CAPU-14-79437

LEVEL: Low

DATE RECEIVED 06-JUN-14

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-38-2	Arsenic	2.13	ug/L	J	1.7	5	5	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-39-3	Barium	42	ug/L		1	5	5	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-42-8	Boron	18.9	ug/L	J	15	50	50	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-70-2	Calcium	17800	ug/L		50	200	200	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-47-3	Chromium	2.78	ug/L	J	2	10	10	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/16/14 09:13	061614-1	1394123
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/16/14 09:13	061614-1	1394123
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7439-95-4	Magnesium	4260	ug/L		110	300	300	1	P	HSC	06/16/14 09:13	061614-1	1394123
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/16/14 09:13	061614-1	1394123
7439-98-7	Molybdenum	1.18	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/24/14 07:36	140623-5	1394090
7440-02-0	Nickel	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-09-7	Potassium	2210	ug/L		50	150	150	1	P	HSC	06/16/14 09:13	061614-1	1394123
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7631-86-9	Silica	61100	ug/L		53	213	213	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-23-5	Sodium	11600	ug/L		100	300	300	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-24-6	Strontium	101	ug/L		1	5	5	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/23/14 21:18	140623-2	1394090
7440-31-5	Tin	100	ug/L	U	25	100	100	10	P	HSC	06/16/14 09:56	061614-1	1394123
7440-61-1	Uranium	0.909	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/14 10:42	140623-4	1394090
7440-62-2	Vanadium	12.1	ug/L		1	5	5	1	P	HSC	06/16/14 09:13	061614-1	1394123
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/16/14 09:13	061614-1	1394123

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:****SAMPLE ID:** 350137006**BASIS:** As Received**DATE COLLECTED** 04-JUN-14**CLIENT ID:** CAPU-14-79437**LEVEL:** Low**DATE RECEIVED** 06-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	62.1	mg/L		0.453	1.24	1.24	1		JJ2	06/26/14 15:45		1399077

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1394090	1394089	SW846 3005A	50	mL	50	mL	06/13/14	JXO1
1394123	1394122	SW846 3005A	50	mL	50	mL	06/12/14	JXO1
1396344	1396342	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

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

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 350137009**BASIS:** As Received**DATE COLLECTED** 04-JUN-14**CLIENT ID:** CAPU-14-79430**LEVEL:** Low**DATE RECEIVED** 06-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 17:32	061814W2-6	1396344

Prep Information:

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:** EPA**SAMPLE ID:** 350137014**BASIS:** As Received**DATE COLLECTED** 04-JUN-14**CLIENT ID:** CAPU-14-79438**LEVEL:** Low**DATE RECEIVED** 06-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	06/18/14 17:33	061814W2-6	1396344

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500

CONTRACT: ESHL00714

METHOD TYPE: SW846

SAMPLE ID: 350137014

BASIS: As Received

DATE COLLECTED 04-JUN-14

CLIENT ID: CAPU-14-79438

LEVEL: Low

DATE RECEIVED 06-JUN-14

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-38-2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-39-3	Barium	98.3	ug/L		1	5	5	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-42-8	Boron	101	ug/L		15	50	50	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-70-2	Calcium	57700	ug/L		50	200	200	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-47-3	Chromium	10	ug/L	U	2	10	10	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	06/16/14 09:10	061614-1	1394123
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/16/14 09:10	061614-1	1394123
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7439-95-4	Magnesium	16300	ug/L		110	300	300	1	P	HSC	06/16/14 09:10	061614-1	1394123
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	06/16/14 09:10	061614-1	1394123
7439-98-7	Molybdenum	0.933	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/24/14 07:58	140623-5	1394090
7440-02-0	Nickel	7.6	ug/L		0.5	2	2	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-09-7	Potassium	5970	ug/L		50	150	150	1	P	HSC	06/16/14 09:10	061614-1	1394123
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7631-86-9	Silica	49700	ug/L		53	213	213	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-23-5	Sodium	18100	ug/L		100	300	300	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-24-6	Strontium	278	ug/L		1	5	5	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/23/14 21:52	140623-2	1394090
7440-31-5	Tin	200	ug/L	U	50	200	200	20	P	HSC	06/16/14 09:52	061614-1	1394123
7440-61-1	Uranium	9.38	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/24/14 10:58	140623-4	1394090
7440-62-2	Vanadium	3.36	ug/L	J	1	5	5	1	P	HSC	06/16/14 09:10	061614-1	1394123
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	06/16/14 09:10	061614-1	1394123

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2014-3500**CONTRACT:** ESHL00714**METHOD TYPE:****SAMPLE ID:** 350137014**BASIS:** As Received**DATE COLLECTED** 04-JUN-14**CLIENT ID:** CAPU-14-79438**LEVEL:** Low**DATE RECEIVED** 06-JUN-14**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	211	mg/L		0.453	1.24	1.24	1		JJ2	06/26/14 15:45		1399077

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1394090	1394089	SW846 3005A	50	mL	50	mL	06/13/14	JXO1
1394123	1394122	SW846 3005A	50	mL	50	mL	06/12/14	JXO1
1396344	1396342	EPA 245.1/245.2 Prep	20	mL	20	mL	06/17/14	AXS5

***Analytical Methods:**

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

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2014-3500

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>
1203104336	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
1203104401	Cobalt	1	ug/L	+/-5	U	P	1	5
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Calcium	50	ug/L	+/-200	U	P	50	200
	Boron	15	ug/L	+/-50	U	P	15	50
	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
	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
1203110252	Mercury	0.067	ug/L	+/-0.2	U	AV	0.067	0.2

*Analytical Methods:

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

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3500 Client ID: CAPU-14-79437S

Contract: ESHL00714 Level: Low

Matrix: WATER % Solids:

Sample ID: 350137006 Spike ID: 1203104339

<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	51.2		1	U	50	102		MS
Arsenic	ug/L	75-125	48.2		2.13	J	50	92.1		MS
Cadmium	ug/L	75-125	49.6		0.11	U	50	99.1		MS
Chromium	ug/L	75-125	51.6		2.78	J	50	97.7		MS
Lead	ug/L	75-125	50.4		0.5	U	50	101		MS
Molybdenum	ug/L	75-125	55.9		1.18		50	109		MS
Nickel	ug/L	75-125	46.8		0.5	U	50	92.9		MS
Selenium	ug/L	75-125	47.8		1.5	U	50	94.4		MS
Silver	ug/L	75-125	51.3		0.2	U	50	103		MS
Thallium	ug/L	75-125	47.8		0.45	U	50	95.6		MS
Uranium	ug/L	75-125	50.5		0.909		50	99.2		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3500 Client ID: CAPU-14-79437S

Contract: ESHL00714 Level: Low

Matrix: WATER % Solids:

Sample ID: 350137006 Spike ID: 1203104404

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	5070		68	U	5000	101		P
Barium	ug/L	75-125	552		42		500	102		P
Beryllium	ug/L	75-125	508		1	U	500	102		P
Boron	ug/L	75-125	520		18.9	J	500	100		P
Calcium	ug/L	75-125	23200		17800		5000	107		P
Cobalt	ug/L	75-125	498		1	U	500	99.7		P
Copper	ug/L	75-125	519		3	U	500	104		P
Iron	ug/L	75-125	5220		30	U	5000	104		P
Magnesium	ug/L	75-125	9470		4260		5000	104		P
Manganese	ug/L	75-125	504		2	U	500	101		P
Potassium	ug/L	75-125	7390		2210		5000	104		P
Silica	ug/L		71300		61100		10700	95.8	N/A	P
Sodium	ug/L	75-125	17500		11600		5000	119		P
Strontium	ug/L	75-125	618		101		500	103		P
Tin	ug/L	75-125	426		25	U	500	85.2		P
Vanadium	ug/L	75-125	538		12.1		500	105		P
Zinc	ug/L	75-125	502		3.3	U	500	100		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2014-3500 Client ID: CAPU-14-79428S

Contract: ESHL00714 Level: Low

Matrix: WATER % Solids:

Sample ID: 350053003 Spike ID: 1203110258

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

*Analytical Methods:

AV EPA 245.1/245.2

Metals
–6–
Duplicate Sample Summary

SDG No.: 2014–3500

Lab Code: GEL

Contract: ESHL00714

Client ID: CAPU–14–79437D

Matrix: WATER

Level: Low

Sample ID: 350137006

Duplicate ID: 1203104338

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	+/-5	2.13 J		1.83 J		15.2		MS
Cadmium	ug/L		0.11 U		0.11 U				MS
Chromium	ug/L	+/-10	2.78 J		2.45 J		12.9		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.18		1.25		5.86		MS
Nickel	ug/L		0.5 U		0.5 U				MS
Selenium	ug/L		1.5 U		1.5 U				MS
Silver	ug/L		0.2 U		0.2 U				MS
Thallium	ug/L		0.45 U		0.45 U				MS
Uranium	ug/L	+/- .2	0.909		0.907		.22		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
-6-
Duplicate Sample Summary

SDG No.: 2014-3500

Lab Code: GEL

Contract: ESHL00714

Client ID: CAPU-14-79437D

Matrix: WATER

Level: Low

Sample ID: 350137006

Duplicate ID: 1203104403

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68 U		68 U				P
Barium	ug/L	+/-20%	42		41.1		2.19		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	18.9 J		18.2 J		3.71		P
Calcium	ug/L	+/-20%	17800		17500		1.7		P
Cobalt	ug/L		1 U		1 U				P
Copper	ug/L		3 U		3 U				P
Iron	ug/L		30 U		30 U				P
Magnesium	ug/L	+/-20%	4260		4140		2.85		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	2210		2160		2.44		P
Silica	ug/L	+/-20%	61100		60000		1.8		P
Sodium	ug/L	+/-20%	11600		11700		.929		P
Strontium	ug/L	+/-20%	101		99.6		1.23		P
Tin	ug/L		25 U		25 U				P
Vanadium	ug/L	+/-5	12.1		11.9		1.86		P
Zinc	ug/L		3.3 U		3.3 U				P

*Analytical Methods:

P SW846 3005A/6010C

Metals
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Duplicate Sample Summary

SDG No.: 2014-3500**Lab Code:** GEL**Contract:** ESHL00714**Client ID:** CAPU-14-79428D**Matrix:** WATER**Level:** Low**Sample ID:** 350053003**Duplicate ID:** 1203110257**Percent Solids for Dup:** N/A

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3500

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>
1203104337								
	Antimony	ug/L	50	50.3		101	80-120	MS
	Arsenic	ug/L	50	47.8		95.6	80-120	MS
	Cadmium	ug/L	50	49.9		99.7	80-120	MS
	Chromium	ug/L	50	49.6		99.1	80-120	MS
	Lead	ug/L	50	50.6		101	80-120	MS
	Molybdenum	ug/L	50	53.3		107	80-120	MS
	Nickel	ug/L	50	48.8		97.5	80-120	MS
	Selenium	ug/L	50	49.5		99	80-120	MS
	Silver	ug/L	50	52.5		105	80-120	MS
	Thallium	ug/L	50	48.3		96.6	80-120	MS
	Uranium	ug/L	50	48.3		96.6	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3500

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>
1203104402								
	Aluminum	ug/L	5000	4990		99.8	80-120	P
	Barium	ug/L	500	510		102	80-120	P
	Beryllium	ug/L	500	507		101	80-120	P
	Boron	ug/L	500	492		98.3	80-120	P
	Calcium	ug/L	5000	5070		101	80-120	P
	Cobalt	ug/L	500	505		101	80-120	P
	Copper	ug/L	500	501		100	80-120	P
	Iron	ug/L	5000	5210		104	80-120	P
	Magnesium	ug/L	5000	5270		105	80-120	P
	Manganese	ug/L	500	509		102	80-120	P
	Potassium	ug/L	5000	5160		103	80-120	P
	Silica	ug/L	10700	10400		97	80-120	P
	Sodium	ug/L	5000	5060		101	80-120	P
	Strontium	ug/L	500	509		102	80-120	P
	Tin	ug/L	500	511		102	80-120	P
	Vanadium	ug/L	500	525		105	80-120	P
	Zinc	ug/L	500	505		101	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2014-3500

Contract: ESHL00714

Aqueous LCS Source: GEL

Solid LCS Source:

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

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3500

Client ID: CAPU-14-79437L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 350137006

Serial Dilution ID: 1203104340

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.13	J	8.5	U	100			MS
Cadmium	.11	U	.55	U				MS
Chromium	2.78	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.18		1.24	J	4.93			MS
Nickel	.5	U	2.5	U				MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.909		.965	J	6.16			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3500

Client ID: CAPU-14-79437L

Contract: ESHL00714

Matrix: LIQUID

Level: Low

Sample ID: 350137006

Serial Dilution ID: 1203104406

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	42		42.8		1.92			P
Beryllium	1	U	5	U				P
Boron	18.9	J	75	U	100			P
Calcium	17800		17000		4.51		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	4260		4270		.221			P
Manganese	2	U	10	U				P
Potassium	2210		2200		.376			P
Silica	61100		58600		4.02		10	P
Sodium	11600		11300		2.46		10	P
Strontium	101		98.7		2.15		10	P
Tin	2.5	U	12.5	U				P
Vanadium	12.1		11.1	J	8.21			P
Zinc	3.3	U	16.5	U				P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2014-3500 **Client ID:** CAPU-14-79428L**Contract:** ESHL00714**Matrix:** LIQUID **Level:** Low**Sample ID:** 350053003 **Serial Dilution ID:** 1203110264

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

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International, LLC (ARSL)
SDG 2014-3500**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1394347

Method: SW 9060 Total Organic Carbon

Sample Analysis

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

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203105820	Method Blank (MB)
1203105822	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203105823	350053030(CAPU-14-79415) Sample Duplicate (DUP)
1203105824	350260005(CAPU-14-79427) Post Spike (PS)
1203105825	350053030(CAPU-14-79415) Post Spike (PS)
1203105826	Laboratory Control Sample (LCS)
1203112489	350748001(VS-R28-V2-79984) Sample Duplicate (DUP)
1203112490	350748001(VS-R28-V2-79984) Post Spike (PS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 350053030 (CAPU-14-79415), 350260005 (CAPU-14-79427) and 350748001 (VS-R28-V2-79984).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

A 15 mg/L Total Inorganic Carbon check standard is analyzed with each analytical run to prove that the instrument is

effectively sparging away the inorganic carbon.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Cyanide and Total
Analytical Batch: 1393812 **Method:** WSP-CN(T)
Prep Batch : 1393811 **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
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203103653	Method Blank (MB)
1203103654	350053003(CAPU-14-79428) Sample Duplicate (DUP)
1203103657	350053003(CAPU-14-79428) Matrix Spike (MS)
1203103660	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: 350053003 (CAPU-14-79428).

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: 1393647

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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203103274	Method Blank (MB)
1203103275	350053033(CAPU-14-79416) Sample Duplicate (DUP)
1203103276	350053033(CAPU-14-79416) Post Spike (PS)
1203103277	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-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350053033 (CAPU-14-79416).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203103276 (CAPU-14-79416).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following sample in this sample group was diluted due to high concentration: 350137014 (CAPU-14-79438).

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: 1303455, 1203103276 (CAPU-14-79416).

Manual Integrations

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product: Ammonia Nitrogen

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

Prep Batch : 1394293 **Method:** EEPA 350.2 Prep

Sample Analysis

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

Sample ID	Client ID
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203104860	Method Blank (MB)
1203104861	Laboratory Control Sample (LCS)
1203104864	350137006(CAPU-14-79437) Sample Duplicate (DUP)
1203104865	350137006(CAPU-14-79437) Matrix Spike (MS)
1203107049	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203107050	350260006(CAPU-14-79435) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 350137006 (CAPU-14-79437) and 350260006 (CAPU-14-79435).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The following samples were re-analyzed due to instrument failure. The results from the reanalysis are reported. 1203104860 (MB) and 1203107049 (CAPU-14-79435).

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1394292	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1394290	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
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203104856	Method Blank (MB)
1203104857	Laboratory Control Sample (LCS)
1203104858	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203104859	350137001(CAPU-14-79429) Matrix Spike (MS)
1203106955	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203106956	350260005(CAPU-14-79427) 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: 350137001 (CAPU-14-79429) and 350260005 (CAPU-14-79427).

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

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

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1203106955 (CAPU-14-79427). The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203104858 (CAPU-14-79429).

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. 350137001 (CAPU-14-79429).

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

The following DER was generated for this SDG: 1303181. 1203106955 (CAPU-14-79427).

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:	1394285	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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203104833	Method Blank (MB)
1203104835	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203104838	349927006(CAPU-14-79434) Post Spike (PS)
1203104840	Laboratory Control Sample (LCS)
1203107052	350260006(CAPU-14-79435) Sample Duplicate (DUP)
1203107053	350260006(CAPU-14-79435) Post Spike (PS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

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: 349927006 (CAPU-14-79434) and 350260006 (CAPU-14-79435).

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

The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. 1203104838 (CAPU-14-79434).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 1203104835 (CAPU-14-79434), 1203104838 (CAPU-14-79434) and 350137014 (CAPU-14-79438). The following sample in this sample group was diluted due to matrix interference: 350137006 (CAPU-14-79437).

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: 1303709. 1203104838 (CAPU-14-79434).

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:	1394297	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1394295	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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203104869	Method Blank (MB)
1203104870	349932001(WST09-14-74376) Sample Duplicate (DUP)
1203104873	349932001(WST09-14-74376) Matrix Spike (MS)
1203104876	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-103 REV# 10.

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 349932001 (WST09-14-74376).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1203104873 (WST09-14-74376).

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1203104870 (WST09-14-74376).

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 (its) proximity to an overrange sample. The results from the reanalysis are reported. 350137006 (CAPU-14-79437) and 350137014 (CAPU-14-79438).

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1302939. 1203104873 (WST09-14-74376).

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: 1394571

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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203105563	Method Blank (MB)
1203105565	350137006(CAPU-14-79437) Sample Duplicate (DUP)
1203105566	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 15.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350137006 (CAPU-14-79437).

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: Specific Conductivity

Analytical Batch: 1397102

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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203112083	350053014(CAPU-14-79439) Sample Duplicate (DUP)
1203112084	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

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: 1395344 and 1397321 **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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203107683	349927006(CAPU-14-79434) Sample Duplicate (DUP)
1203107686	Laboratory Control Sample (LCS)
1203112637	350137014(CAPU-14-79438) Sample Duplicate (DUP)
1203112638	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

The Titration and Ion analysis was performed on a Thermo Orion Star A111. Immediates

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1304724, 1203107683 (CAPU-14-79434) and 350137006 (CAPU-14-79437)- Batch 1395344. The following DER was generated for this SDG: 1306892, 350137014 (CAPU-14-79438)- Batch 1397321.

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: 1396656 **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
350137006	CAPU-14-79437
350137014	CAPU-14-79438
1203111019	Method Blank (MB)
1203111022	350137006(CAPU-14-79437) Sample Duplicate (DUP)
1203111024	350137006(CAPU-14-79437) Matrix Spike (MS)
1203111025	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

The Titration and Ion analysis was performed on a manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 350137006 (CAPU-14-79437).

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

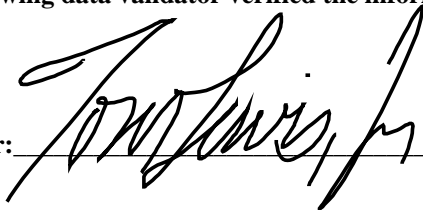
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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:

03July14

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: 2014-3500 GEL Work Order: 350137

The Qualifiers in this report are defined as follows:

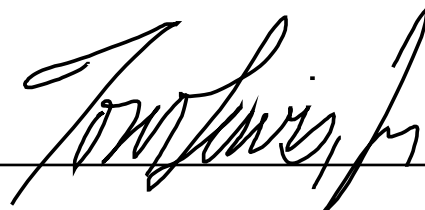
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- E Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
-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

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

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

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

Reviewed by



GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 1, 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: 2014-3500

Client Sample ID: CAPU-14-79429
Sample ID: 350137001
Matrix: W
Collect Date: 04-JUN-14 12:45
Receive Date: 06-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	06/19/14	2326	1394347	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	06/09/14	1341	1393812	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	J	0.0605	0.033	0.100	mg/L	1	KLP1	06/11/14	1319	1394292	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/09/14	0924	1393811
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/10/14	1600	1394290

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

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

Certificate of Analysis

Report Date: July 1, 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: 2014-3500

Client Sample ID: CAPU-14-79437
Sample ID: 350137006
Matrix: W
Collect Date: 04-JUN-14 12:45
Receive Date: 06-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	RXB5	06/11/14	0440	1393647	1
Chloride		3.13	0.067	0.200	mg/L	1					
Fluoride		0.439	0.033	0.100	mg/L	1					
Sulfate		4.01	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.0958	0.017	0.050	mg/L	1	KLP1	06/12/14	1429	1394294	2
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.560	0.085	0.250	mg/L	5	KLP1	06/12/14	1110	1394285	3
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	U	ND	0.017	0.050	mg/L	1	KLP1	06/11/14	1018	1394297	4
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		127	3.40	14.3	mg/L		MXB3	06/10/14	1615	1394571	5
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 21.0C	H	8.32	0.010	0.100	SU	1	PXO1	06/12/14	2049	1395344	6
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		80.7	0.725	1.00	mg/L		PXO1	06/18/14	1818	1396656	7
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		184	1.00	1.00	umhos/cm	1	EXM3	06/19/14	1531	1397102	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/12/14	1229	1394293
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/10/14	1600	1394295

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Certificate of Analysis

Report Date: July 1, 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: 2014-3500

Client Sample ID: CAPU-14-79437
Sample ID: 350137006

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: July 1, 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: 2014-3500

Client Sample ID: CAPU-14-79430
Sample ID: 350137009
Matrix: W
Collect Date: 04-JUN-14 10:09
Receive Date: 06-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.731	0.330	1.00	mg/L	1	TSM	06/20/14	0000	1394347	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	06/09/14	1341	1393812	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl		0.101	0.033	0.100	mg/L	1	KLP1	06/11/14	1311	1394292	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	06/09/14	0924	1393811
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	06/10/14	1600	1394290

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

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

Certificate of Analysis

Report Date: July 1, 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: 2014-3500

Client Sample ID: CAPU-14-79438
Sample ID: 350137014
Matrix: W
Collect Date: 04-JUN-14 09:09
Receive Date: 06-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	J	0.157	0.067	0.200	mg/L	1	RXB5	06/11/14	0510	1393647	1
Fluoride		0.408	0.033	0.100	mg/L	1					
Chloride		44.9	0.670	2.00	mg/L	10	RXB5	06/11/14	1632	1393647	2
Sulfate		28.8	1.33	4.00	mg/L	10					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	J	0.0376	0.017	0.050	mg/L	1	KLP1	06/12/14	1431	1394294	3
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		4.29	0.170	0.500	mg/L	10	KLP1	06/12/14	1111	1394285	4
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0231	0.017	0.050	mg/L	1	KLP1	06/11/14	1019	1394297	5
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		331	3.40	14.3	mg/L		MXB3	06/10/14	1615	1394571	6
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 13.8C	H	7.91	0.010	0.100	SU	1	PXO1	06/21/14	1138	1397321	7
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		155	0.725	1.00	mg/L		PXO1	06/18/14	1828	1396656	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		546	1.00	1.00	umhos/cm	1	EXM3	06/19/14	1532	1397102	9

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/12/14	1229	1394293
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/10/14	1600	1394295

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Certificate of Analysis

Report Date: July 1, 2014

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

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

Client SDG: 2014-3500

Client Sample ID: CAPU-14-79438
Sample ID: 350137014

Project: ESHL00714
Client ID: ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

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QC Summary

Report Date: July 1, 2014

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

Contact: Mr. Keith Greene

Workorder: 350137

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1394347										
QC1203105822	350260005	DUP									
Total Organic Carbon Average	U	ND	U	ND	mg/L	N/A			TSM	06/20/14	01:07
QC1203105823	350053030	DUP									
Total Organic Carbon Average	U	ND	U	ND	mg/L	N/A				06/19/14	22:40
QC1203112489	350748001	DUP									
Total Organic Carbon Average	J	0.439	J	0.426	mg/L	3.01	^	(+/-1.00)		06/20/14	04:59
QC1203105826	LCS										
Total Organic Carbon Average	10.0			9.92	mg/L			99.2	(85%-115%)	06/19/14	19:10
QC1203105820	MB										
Total Organic Carbon Average			U	ND	mg/L					06/19/14	19:01
QC1203105824	350260005	PS									
Total Organic Carbon Average	10.0	U	ND	10.5	mg/L			103	(65%-120%)	06/20/14	01:27
QC1203105825	350053030	PS									
Total Organic Carbon Average	10.0	U	ND	10.4	mg/L			102	(65%-120%)	06/19/14	23:00
QC1203112490	350748001	PS									
Total Organic Carbon Average	10.0	J	0.439	10.7	mg/L			103	(65%-120%)	06/20/14	05:19
Flow Injection Analysis											
Batch	1393812										
QC1203103654	350053003	DUP									
Cyanide, Total	U	ND	U	ND	ug/L	N/A			AXH3	06/09/14	13:27
QC1203103660	LCS										
Cyanide, Total	50.0			51.2	ug/L			102	(90%-110%)	06/09/14	13:15
QC1203103653	MB										
Cyanide, Total			U	ND	ug/L					06/09/14	13:14
QC1203103657	350053003	MS									
Cyanide, Total	100	U	ND	103	ug/L			103	(90%-110%)	06/09/14	13:28
Ion Chromatography											
Batch	1393647										
QC1203103275	350053033	DUP									
Bromide	U	ND	U	ND	mg/L	N/A			RXB5	06/11/14	02:40

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1393647										
Chloride		5.91		5.95	mg/L	0.720		(0%-20%)			
Fluoride		0.909		0.911	mg/L	0.209		(0%-20%)	RXB5	06/11/14	02:40
Sulfate		4.76		4.77	mg/L	0.0986		(0%-20%)			
QC1203103277	LCS										
Bromide	1.25			1.33	mg/L		106	(90%-110%)		06/10/14	23:11
Chloride	5.00			4.93	mg/L		98.6	(90%-110%)			
Fluoride	2.50			2.55	mg/L		102	(90%-110%)			
Sulfate	10.0			10.3	mg/L		103	(90%-110%)			
QC1203103274	MB										
Bromide			U	ND	mg/L					06/10/14	22:41
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1203103276	350053033	PS									
Bromide	1.25	U	ND	1.42	mg/L		113 *	(90%-110%)		06/11/14	03:10
Chloride	5.00		5.91	11.8	mg/L		118 *	(90%-110%)			
Fluoride	2.50		0.909	3.57	mg/L		106	(90%-110%)			
Sulfate	10.0		4.76	15.7	mg/L		109	(90%-110%)			
Nutrient Analysis											
Batch	1394285										
QC1203104835	349927006	DUP									
Nitrogen, Nitrate/Nitrite			4.01	3.74	mg/L	6.97		(0%-20%)	KLP1	06/12/14	10:43
QC1203107052	350260006	DUP									
Nitrogen, Nitrate/Nitrite			0.478	0.480	mg/L	0.418		(0%-20%)		06/12/14	11:25
QC1203104840	LCS										
Nitrogen, Nitrate/Nitrite	1.00			1.00	mg/L		100	(90%-110%)		06/12/14	10:40
QC1203104833	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/12/14	10:39

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1394285										
QC1203104838	349927006	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.401		1.52	mg/L		112 *	(90%-110%)	KLP1	06/12/14	10:44
QC1203107053	350260006	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.478		1.44	mg/L		96.2	(90%-110%)		06/12/14	11:26
Batch	1394292										
QC1203104858	350137001	DUP									
Nitrogen, Total Kjeldahl	J	0.0605	J	0.0372	mg/L	47.7 ^		(+/-0.100)	KLP1	06/11/14	13:06
QC1203106955	350260005	DUP									
Nitrogen, Total Kjeldahl		0.145	U	ND	mg/L	145* ^		(+/-0.100)		06/11/14	13:13
QC1203104857	LCS										
Nitrogen, Total Kjeldahl	1.00			1.07	mg/L		107	(90%-110%)		06/11/14	12:54
QC1203104856	MB										
Nitrogen, Total Kjeldahl			J	0.0621	mg/L					06/11/14	12:53
QC1203104859	350137001	MS									
Nitrogen, Total Kjeldahl	1.00	J	0.0605	1.06	mg/L		100	(90%-110%)		06/11/14	13:07
QC1203106956	350260005	MS									
Nitrogen, Total Kjeldahl	1.00	0.145		1.16	mg/L		102	(90%-110%)		06/11/14	13:14
Batch	1394294										
QC1203104864	350137006	DUP									
Nitrogen, Ammonia		0.0958		0.116	mg/L	19.1 ^		(+/-0.050)	KLP1	06/12/14	14:30
QC1203107049	350260006	DUP									
Nitrogen, Ammonia		0.176		0.202	mg/L	13.8 ^		(+/-0.050)		06/12/14	14:53
QC1203104861	LCS										
Nitrogen, Ammonia	1.00			1.00	mg/L		100	(90%-110%)		06/12/14	14:16
QC1203104860	MB										
Nitrogen, Ammonia			U	ND	mg/L					06/12/14	14:26
QC1203104865	350137006	MS									
Nitrogen, Ammonia	1.00	0.0958		1.13	mg/L		103	(90%-110%)		06/12/14	14:30
QC1203107050	350260006	MS									
Nitrogen, Ammonia	1.00	0.176		1.10	mg/L		92.4	(90%-110%)		06/12/14	14:41
Batch	1394297										
QC1203104870	349932001	DUP									

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1394297										
Phosphorus, Total as P		U	ND	U	ND	mg/L	N/A		KLP1	06/11/14	09:36
QC1203104876 LCS	1.00				1.01	mg/L	101	(79%-126%)		06/11/14	09:34
Phosphorus, Total as P											
QC1203104869 MB											
Phosphorus, Total as P			U		ND	mg/L				06/11/14	09:33
QC1203104873 349932001 MS											
Phosphorus, Total as P	1.00	U	ND		1.74	mg/L	173 *	(64%-134%)		06/11/14	09:37
Solids Analysis											
Batch	1394571										
QC1203105565 350137006 DUP											
Total Dissolved Solids			127		116	mg/L	3.64	(0%-10%)	MXB3	06/10/14	16:15
QC1203105566 LCS											
Total Dissolved Solids	300				289	mg/L	96.2	(95%-105%)		06/10/14	16:15
QC1203105563 MB											
Total Dissolved Solids			U		ND	mg/L				06/10/14	16:15
Titration and Ion Analysis											
Batch	1395344										
QC1203107683 349927006 DUP											
pH		H	8.03	H	8.02	SU	0.125	(0%-10%)	PXO1	06/12/14	19:51
QC1203107686 LCS											
pH	7.00				7.01	SU	100	(99%-101%)		06/12/14	19:26
Batch	1396656										
QC1203111022 350137006 DUP											
Alkalinity, Total as CaCO3			80.7		80.7	mg/L	0.00	(0%-20%)	PXO1	06/18/14	18:21
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1203111025 LCS											
Alkalinity, Total as CaCO3	50.0				50.3	mg/L	101	(90%-110%)		06/18/14	17:50
QC1203111019 MB											
Alkalinity, Total as CaCO3			U		ND	mg/L				06/18/14	17:50
Carbonate alkalinity (CaCO3)			U		ND	mg/L					
QC1203111024 350137006 MS											
Alkalinity, Total as CaCO3	50.0		80.7		138	mg/L	114	(80%-120%)		06/18/14	18:24

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1397102										
QC1203112083	350053014	DUP									
Conductivity		180		181	umhos/cm	0.719		(0%-10%)	EXM3	06/19/14	15:26
QC1203112084	LCS										
Conductivity	1410			1340	umhos/cm		95.1	(95%-105%)		06/19/14	15:21
Batch	1397321										
QC1203112637	350137014	DUP									
pH	H	7.91	H	7.89	SU	0.253		(0%-10%)	PXO1	06/21/14	11:40
QC1203112638	LCS										
pH	7.00			6.99	SU		99.9	(99%-101%)		06/21/14	11:15

Notes:

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

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QC Summary

Workorder: 350137

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

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 11-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 365.4	Matrix Type: Liquid	Client Code: ALBR, BRKL, CBMW, ECWS,
Batch ID: 1394297	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349932(2014-3483),350018,350034(X406037),350053(2014-3494),350074(34668),350075,350079,350080,350088,350137(2014-3500),350262(X406074) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS/PS: QC 1203104873MS		1. The spike recovery falls outside of the established acceptance limits due to matrix interference.	

Originator's Name:
Kristen Parson 11-JUN-14

Data Validator/Group Leader:
Aubrey Kingsbury 11-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 11-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2, EPA 351.2 SC	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394292	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500),350260(2014-3510) Application Issues: Failed RPD for DUP			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed RPD for DUP: QC 1203106955DUP		1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample.	

Originator's Name:
Kristen Parson 11-JUN-14

Data Validator/Group Leader:
Aubrey Kingsbury 11-JUN-14

DATA EXCEPTION REPORT

Mo.Day Yr. 12-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: EPA 300.0	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1393647	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS/PS: QC 1203103276PS		1. The spike recovery falls outside of the GEL acceptance limits for chloride and bromide but within the client specified limits.	

Originator's Name:

Rachael Bell 12-JUN-14

Data Validator/Group Leader:

Thomas Lewis 01-JUL-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 12-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 353.2	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394285	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 349927(2014-3481),350053(2014-3494),350137(2014-3500),350260(2014-3510) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS/PS: QC 1203104838PS		1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.	

Originator's Name:
Kristen Parson 12-JUN-14

Data Validator/Group Leader:
Elzbieta Szulc 12-JUN-14

Originator's Name:		Data Validator/Group Leader:	
Patrick Orgel	16-JUN-14	Elzbieta Szulc	17-JUN-14

DATA EXCEPTION REPORT			
Mo.Day Yr. 21-JUN-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: See Below	Matrix Type: Liquid	Client Code: BATL, ESHL, IESC, WSRB
Batch ID: 1397321	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350117,350118(350117-1),350137(2014-3500),350287,350507,350974 Application Issues: Sample received out of holding			
Specification and Requirements		DER Disposition:	
Exception Description: Test/Methods: EPA 150.1, SM 4500-H B, SW846 9040B/9040C, SW846 9040C 1. Sample received out of holding: 350117 016 350118 001,002,003,004,005,006 350137 014 350287 001,002,003,004,005,006,007,008,009, 010 350507 001 350974 001		1. Samples were received and analyzed outside of method specified holding time.	

Originator's Name:
Patrick Orgel 21-JUN-14

Data Validator/Group Leader:
Elzbieta Szulc 24-JUN-14

Radiological Analysis

**Radiochemistry Case Narrative
ARS International, LLC (ARSL)
SDG 2014-3500
Work Order 350137**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1394048

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203104205	Method Blank (MB)
1203104206	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203104207	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203104205 (MB) and 1203104207 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350137001 (CAPU-14-79429). The QC was from ARSL work order 350137.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The Am-241 blank result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

Recounts

Sample 350137009 (CAPU-14-79430) was recounted due to low carrier/tracer yield. The recount is reported.

Sample 1203104205 (MB) was recounted due to a suspected blank 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. The following DER was generated for this SDG: DER 1305674 was generated due to RDL less than MDA. 1. Sample 350137009 did not meet the Am-241 detection limit due to the high standard deviation. 1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The sample does meet the client's tracer yield requirement, has greater than 400 tracer counts, and was counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDAs. 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 Am-241 blank result is greater than the decision level but less than the MDC.

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:	1394049

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203104208	Method Blank (MB)
1203104209	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203104210	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1203104208 (MB) and 1203104210 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350137001 (CAPU-14-79429). The QC was from ARSL work order 350137.

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 1203104209 (CAPU-14-79429), 350137001 (CAPU-14-79429) and 350137009 (CAPU-14-79430) 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 U, Liquid
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1394050

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203104211	Method Blank (MB)
1203104212	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203104213	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:**Calibration Information**

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

Standards Information

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

Sample Geometry

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

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

Aliquots for samples 1203104211 (MB) and 1203104213 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350137001 (CAPU-14-79429). The QC was from ARSL work order 350137.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

Recounts

Sample 350137009 (CAPU-14-79430) was recounted due to a peak shift. The recount is reported.

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

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

Manual Integration

No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

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

Additional Comments

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

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: **GammaSpec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1394541

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203105494	Method Blank (MB)
1203105495	350137001(CAPU-14-79429) Sample Duplicate (DUP)
1203105496	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 June 2013, July 2013, November 2013 and March 2014.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 350137001 (CAPU-14-79429). The QC was from ARSL work order 350137.

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: 1395946

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203109191	Method Blank (MB)
1203109192	350260005(CAPU-14-79427) Sample Duplicate (DUP)
1203109193	350260005(CAPU-14-79427) Matrix Spike (MS)
1203109194	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 1203109191 (MB) and 1203109194 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 350260005 (CAPU-14-79427). The QC was from ARSL work order 350260.

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.

Recounts

Sample 350137001 (CAPU-14-79429) was recounted due to high MDC. The recount is reported. Sample 1203109192 (CAPU-14-79427) was recounted due to results more negative than the three sigma TPU. The second count 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, 1203109193 (CAPU-14-79427), 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:	1395947

Sample ID	Client ID
350137001	CAPU-14-79429
350137009	CAPU-14-79430
1203109195	Method Blank (MB)
1203109196	350417001(BDW08-14-79467) Sample Duplicate (DUP)
1203109197	350417001(BDW08-14-79467) Matrix Spike (MS)
1203109198	350417001(BDW08-14-79467) Matrix Spike Duplicate (MSD)
1203109199	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 17.

Calibration Information:**Calibration Information**

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

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

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

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

Recounts

None of the samples in this 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

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

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

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Qualifier Definition Report for

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

Client SDG: 2014-3500 GEL Work Order: 350137

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Review/Validation

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

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

Signature:



Name: Kate Gellatly

Date: 01 JUL 2014

Title: Analyst I

DATA EXCEPTION REPORT			
Mo.Day Yr. 18-JUN-14	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Am-05-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1394048	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 350137(2014-3500) Application Issues: RDL less than MDA			
Specification and Requirements Exception Description:		DER Disposition:	
1. Sample 350137009 did not meet the Am-241 detection limit due to the high standard deviation.		1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The sample does meet the client's tracer yield requirement, has greater than 400 tracer counts, and was counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDAs. Reporting results.	

Originator's Name:
Melanie Aycock 18-JUN-14

Data Validator/Group Leader:
Scott Moreland 01-JUL-14

Sample Data Summary

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79429
Sample ID: 350137001
Matrix: W
Collect Date: 04-JUN-14
Receive Date: 06-JUN-14
Collector: Client

Project: ESHL00714
Client ID: ARSL004

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

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.0361	+/-0.0115	0.0446	0.0188	+/-0.0116	0.050	pCi/L		JXR1	06/14/14	1303	1394048	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	0.00	+/-0.00578	0.0261	0.00984	+/-0.00578	0.050	pCi/L		JXR1	06/19/14	1036	1394049	2
Plutonium-239/240	U	0.00944	+/-0.00746	0.043	0.0183	+/-0.00747	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		0.524	+/-0.0359	0.0625	0.028	+/-0.0491	1.00	pCi/L		JXR1	06/14/14	1256	1394050	3
Uranium-235/236	U	0.0269	+/-0.0123	0.0524	0.0221	+/-0.0124	1.00	pCi/L						
Uranium-238		0.295	+/-0.0271	0.0351	0.0143	+/-0.033	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammasesc "As Received"

Cesium-137	U	0.615	+/-1.54	5.59	2.56	+/-1.55	8.00	pCi/L		MJH1	06/13/14	0752	1394541	4
Cobalt-60	U	1.81	+/-1.80	7.01	3.15	+/-1.85	8.00	pCi/L						
Neptunium-237	U	-0.546	+/-2.87	10.2	4.80	+/-2.88	10.0	pCi/L						
Potassium-40	U	11.4	+/-19.9	73.8	33.3	+/-20.1	10.0	pCi/L						
Sodium-22	U	-0.173	+/-1.75	5.67	2.49	+/-1.75	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	-0.108	+/-0.094	0.406	0.173	+/-0.094	0.500	pCi/L		KSD1	06/25/14	1409	1395946	5
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WSP-GrossA/B "As Received"

Beta		2.90	+/-0.478	1.47	0.713	+/-0.537	3.00	pCi/L		BXF1	06/22/14	1251	1395947	6
Alpha	U	0.905	+/-0.442	1.43	0.648	+/-0.449	3.00	pCi/L		BXF1	06/25/14	1616	1395947	7

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1394048	65.0	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1394049	68.5	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1394050	91.2	(50%-105%)

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79429

Project: ESHL00714

Sample ID: 350137001

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"						1395946	85.4	(50%-105%)				

Notes:

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

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79430

Sample ID: 350137009

Matrix: W

Collect Date: 04-JUN-14

Receive Date: 06-JUN-14

Collector: Client

Project: ESHL00714

Client ID: ARSL004

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

Alphaspec Am241 Liquid "As Received"

Americium-241	U	-0.00856	+/-0.0121	0.074	0.0312	+/-0.0121	0.050	pCi/L		JXR1	06/17/14	1531	1394048	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	-0.00548	+/-0.00672	0.0303	0.0114	+/-0.00672	0.050	pCi/L		JXR1	06/19/14	1036	1394049	2
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Plutonium-239/240	U	0.00822	+/-0.00909	0.0499	0.0212	+/-0.0091	0.050	pCi/L						
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Alphaspec U, Liquid "As Received"

Uranium-234		4.45	+/-0.105	0.0643	0.0288	+/-0.304	1.00	pCi/L		JXR1	06/17/14	1457	1394050	3
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Uranium-235/236		0.151	+/-0.0224	0.0539	0.0228	+/-0.0244	1.00	pCi/L						
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Uranium-238		2.97	+/-0.0861	0.0361	0.0147	+/-0.209	0.500	pCi/L						
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Rad Gamma Spec Analysis

Gammasespec "As Received"

Cesium-137	U	-1.95	+/-1.40	4.36	2.02	+/-1.48	8.00	pCi/L		MJH1	06/13/14	0857	1394541	4
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Cobalt-60	U	-0.424	+/-0.967	3.56	1.55	+/-0.972	8.00	pCi/L						
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Neptunium-237	U	0.720	+/-2.30	8.03	3.80	+/-2.31	10.0	pCi/L						
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Potassium-40	U	-6.41	+/-14.0	53.3	24.3	+/-14.1	10.0	pCi/L						
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Sodium-22	U	0.417	+/-0.947	3.73	1.64	+/-0.952	10.0	pCi/L						
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Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	0.102	+/-0.137	0.480	0.215	+/-0.137	0.500	pCi/L		KSD1	06/24/14	0731	1395946	5
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WSP-GrossA/B "As Received"

Beta		7.55	+/-0.640	1.81	0.884	+/-0.919	3.00	pCi/L		BXF1	06/22/14	1243	1395947	6
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Alpha		8.57	+/-0.824	1.74	0.793	+/-1.10	3.00	pCi/L		BXF1	06/25/14	1616	1395947	7
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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"	1394048	52.2	(50%-105%)
Plutonium-242 Tracer		Alphaspec Pu, Liquid "As Received"	1394049	56.1	(50%-105%)
Uranium-232 Tracer		Alphaspec U, Liquid "As Received"	1394050	89.5	(50%-105%)
Strontium Carrier		GFPC, Sr90, liquid "As Received"	1395946	87.8	(50%-105%)

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: July 1, 2014

Contact: Mr. Keith Greene

Project: LANL-WQH Groundwater Samples

Client Sample ID: CAPU-14-79430

Project: ESHL00714

Sample ID: 350137009

Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery		Test									Batch ID	Recovery%	Acceptable Limits	

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

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

Report Date: July 1, 2014
Page 1 of 6

Los Alamos, New Mexico

Contact: Mr. Keith Greene

Workorder: 350137

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1394048										
QC1203104206	350137001	DUP									
Americium-241	U	0.0361	U	0.0271	pCi/L	0.202		(0-1)	JXR1	06/14/1413:03	
	Uncert:	+/-0.0115		+/-0.0106							
	TPU:	+/-0.0116		+/-0.0107							
**Americium-243 Tracer	2.72	1.77		2.07	pCi/L		75.8	(50%-105%)			
	Uncert:	+/-0.084		+/-0.0781							
	TPU:	+/-0.141		+/-0.134							
QC1203104207	LCS										
Americium-241	1.41			1.42	pCi/L		101	(80%-120%)	JXR1	06/14/1413:03	
	Uncert:			+/-0.0498							
	TPU:			+/-0.0753							
**Americium-243 Tracer	2.18			1.71	pCi/L		78.5	(50%-105%)			
	Uncert:			+/-0.0612							
	TPU:			+/-0.106							
QC1203104205	MB										
Americium-241			U	0.0211	pCi/L				JXR1	06/17/1415:31	
	Uncert:			+/-0.00791							
	TPU:			+/-0.00796							
**Americium-243 Tracer	2.18			2.04	pCi/L		93.7	(50%-105%)			
	Uncert:			+/-0.0644							
	TPU:			+/-0.110							
Batch	1394049										
QC1203104209	350137001	DUP									
Plutonium-238	U	0.00	U	0.00468	pCi/L	0.203		(0-1)	JXR1	06/19/1410:36	
	Uncert:	+/-0.00578		+/-0.00573							
	TPU:	+/-0.00578		+/-0.00574							
Plutonium-239/240	U	0.00944	U	0.00468	pCi/L	0.153		(0-1)			
	Uncert:	+/-0.00746		+/-0.0081							
	TPU:	+/-0.00747		+/-0.00811							
**Plutonium-242 Tracer	2.41	1.65		1.77	pCi/L		73.3	(50%-105%)			
	Uncert:	+/-0.0759		+/-0.0751							
	TPU:	+/-0.127		+/-0.126							
QC1203104210	LCS										
Plutonium-238			U	0.0167	pCi/L			(80%-120%)	JXR1	06/12/1413:33	
	Uncert:			+/-0.00714							
	TPU:			+/-0.00718							
Plutonium-239/240	1.97			1.97	pCi/L		100	(80%-120%)			
	Uncert:			+/-0.0687							
	TPU:			+/-0.112							
**Plutonium-242 Tracer	1.93			1.39	pCi/L		72.4	(50%-105%)			
	Uncert:			+/-0.0678							
	TPU:			+/-0.110							

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1394049										
QC1203104208	MB										
Plutonium-238			U	-0.0025	pCi/L				JXR1	06/12/14	13:33
				Uncert: +/-0.00559							
				TPU: +/-0.00559							
Plutonium-239/240			U	0.010	pCi/L						
				Uncert: +/-0.00612							
				TPU: +/-0.00614							
**Plutonium-242 Tracer	1.93			1.34	pCi/L		69.7	(50%-105%)			
				Uncert: +/-0.0695							
				TPU: +/-0.112							
Batch	1394050										
QC1203104212	350137001	DUP									
Uranium-234		0.524		0.573	pCi/L	0.241		(0-1)	JXR1	06/14/14	12:56
		Uncert: +/-0.0359		+/-0.0376							
		TPU: +/-0.0491		+/-0.0525							
Uranium-235/236		U 0.0269	U	0.018	pCi/L	0.211		(0-1)			
		Uncert: +/-0.0123		+/-0.00849							
		TPU: +/-0.0124		+/-0.00856							
Uranium-238		0.295		0.294	pCi/L	0.00654		(0-1)			
		Uncert: +/-0.0271		+/-0.0271							
		TPU: +/-0.033		+/-0.033							
**Uranium-232 Tracer	2.74	2.50		2.48	pCi/L		90.2	(50%-105%)			
		Uncert: +/-0.0818		+/-0.0821							
		TPU: +/-0.193		+/-0.194							
QC1203104213	LCS										
Uranium-234				2.61	pCi/L				JXR1	06/14/14	12:56
		Uncert: +/-0.0875		+/-0.0875							
		TPU: +/-0.196		+/-0.196							
Uranium-235/236				0.125	pCi/L						
		Uncert: +/-0.0217		+/-0.0217							
		TPU: +/-0.0232		+/-0.0232							
Uranium-238	2.72			2.58	pCi/L		94.9	(80%-120%)			
		Uncert: +/-0.0867		+/-0.0867							
		TPU: +/-0.194		+/-0.194							
**Uranium-232 Tracer	2.19			1.34	pCi/L		61.2	(50%-105%)			
		Uncert: +/-0.0801		+/-0.0801							
		TPU: +/-0.168		+/-0.168							
QC1203104211	MB										
Uranium-234			U	0.00251	pCi/L				JXR1	06/14/14	12:56
		Uncert: +/-0.00752		+/-0.00752							
		TPU: +/-0.00753		+/-0.00753							
Uranium-235/236			U	0.0062	pCi/L						
		Uncert: +/-0.00759		+/-0.00759							
		TPU: +/-0.0076		+/-0.0076							
Uranium-238			U	0.00752	pCi/L						
		Uncert: +/-0.00752		+/-0.00752							
		TPU: +/-0.00754		+/-0.00754							

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1394050										
**Uranium-232 Tracer	2.19			1.51	pCi/L		68.7	(50%-105%)			
	Uncert:			+/-0.0746							
	TPU:			+/-0.163							
Rad Gamma Spec											
Batch	1394541										
QC1203105495	350137001	DUP									
Cesium-137	U	0.615	U	-0.536	pCi/L	0.182		(0-1)	MJH1	06/16/1411:11	
	Uncert:	+/-1.54		+/-1.61							
	TPU:	+/-1.55		+/-1.61							
Cobalt-60	U	1.81	U	0.0355	pCi/L	0.261		(0-1)			
	Uncert:	+/-1.80		+/-1.55							
	TPU:	+/-1.85		+/-1.55							
Neptunium-237	U	-0.546	U	-0.938	pCi/L	0.0342		(0-1)			
	Uncert:	+/-2.87		+/-2.85							
	TPU:	+/-2.88		+/-2.86							
Potassium-40	U	11.4	U	11.1	pCi/L	0.00436		(0-1)			
	Uncert:	+/-19.9		+/-17.6							
	TPU:	+/-20.1		+/-17.8							
Sodium-22	U	-0.173	U	-1.19	pCi/L	0.172		(0-1)			
	Uncert:	+/-1.75		+/-1.16							
	TPU:	+/-1.75		+/-1.20							
QC1203105496	LCS										
Americium-241	34500			37000	pCi/L		107	(80%-120%)	MJH1	06/16/1412:12	
	Uncert:			+/-779							
	TPU:			+/-1890							
Cesium-137	14100			14600	pCi/L		104	(80%-120%)			
	Uncert:			+/-182							
	TPU:			+/-627							
Cobalt-60	17700			18100	pCi/L		102	(80%-120%)			
	Uncert:			+/-221							
	TPU:			+/-785							
Neptunium-237			U	74.7	pCi/L						
	Uncert:			+/-83.6							
	TPU:			+/-85.4							
Potassium-40			U	161	pCi/L						
	Uncert:			+/-148							
	TPU:			+/-148							
Sodium-22			U	-2.6	pCi/L						
	Uncert:			+/-28.1							
	TPU:			+/-28.1							
QC1203105494	MB										
Cesium-137			U	-2.42	pCi/L				MJH1	06/13/1409:13	
	Uncert:			+/-1.67							
	TPU:			+/-1.76							
Cobalt-60			U	1.76	pCi/L						
	Uncert:			+/-1.39							

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1394541										
Neptunium-237	TPU:			+/-1.45							
			U	0.0507	pCi/L						
	Uncert:			+/-2.20							
Potassium-40	TPU:			+/-2.20							
			U	-21.8	pCi/L						
	Uncert:			+/-16.9							
Sodium-22	TPU:			+/-17.6							
			U	-0.247	pCi/L						
	Uncert:			+/-1.35							
	TPU:			+/-1.35							
Rad Gas Flow											
Batch	1395946										
QC1203109192	350260005	DUP									
Strontium-90	U	-0.0242	U	-0.166	pCi/L	0.341		(0-1)	KSD1	06/24/1417:14	
	Uncert:	+/-0.129		+/-0.0781							
	TPU:	+/-0.129		+/-0.0781							
**Strontium Carrier	8.20	5.00		7.00	mg		85.4	(50%-105%)			
QC1203109194	LCS										
Strontium-90	22.6			23.3	pCi/L		103	(80%-120%)	KSD1	06/24/1407:51	
	Uncert:			+/-0.647							
	TPU:			+/-1.97							
**Strontium Carrier	8.20			7.10	mg		86.6	(50%-105%)			
QC1203109191	MB										
Strontium-90			U	-0.14	pCi/L				KSD1	06/24/1407:50	
	Uncert:			+/-0.111							
	TPU:			+/-0.111							
**Strontium Carrier	8.20			7.00	mg		85.4	(50%-105%)			
QC1203109193	350260005	MS									
Strontium-90	453	U	-0.0242	470	pCi/L		104	(75%-125%)	KSD1	06/24/1407:51	
	Uncert:		+/-0.129	+/-12.7							
	TPU:		+/-0.129	+/-39.6							
**Strontium Carrier	8.20	5.00		7.40	mg		90.2	(50%-105%)			
Batch	1395947										
QC1203109196	350417001	DUP									
Alpha		13.1		12.9	pCi/L	0.0393		(0-1)	BXF1	06/25/1416:01	
	Uncert:	+/-0.924		+/-0.883							
	TPU:	+/-1.44		+/-1.41							
Beta		7.83		6.14	pCi/L	0.467		(0-1)		06/22/1413:49	
	Uncert:	+/-0.697		+/-0.653							
	TPU:	+/-0.977		+/-0.831							
QC1203109199	LCS										
Alpha	12.3			11.6	pCi/L		93.8	(80%-120%)	BXF1	06/25/1416:00	
	Uncert:			+/-0.655							
	TPU:			+/-1.18							
Beta	45.2			52.1	pCi/L		115	(80%-120%)		06/22/1412:13	

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QC Summary

Workorder: 350137

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1395947										
				Uncert:			+/-0.936				
				TPU:			+/-4.42				
QC1203109195	MB										
Alpha			U	-0.059	pCi/L				BXF1	06/25/1416:01	
				Uncert:			+/-0.0301				
				TPU:			+/-0.0301				
Beta			U	-0.168	pCi/L					06/22/1413:53	
				Uncert:			+/-0.0709				
				TPU:			+/-0.0709				
QC1203109197	350417001	MS									
Alpha		165	13.1		190	pCi/L		108	(75%-125%)	BXF1	06/25/1416:00
			Uncert:	+/-0.924			+/-11.9				
			TPU:	+/-1.44			+/-20.3				
Beta		603	7.83		707	pCi/L		116	(75%-125%)		06/22/1412:13
			Uncert:	+/-0.697			+/-13.0				
			TPU:	+/-0.977			+/-60.2				
QC1203109198	350417001	MSD									
Alpha		165	13.1		196	pCi/L	0.0692	111	(0-1)	BXF1	06/25/1416:00
			Uncert:	+/-0.924			+/-11.3				
			TPU:	+/-1.44			+/-20.0				
Beta		603	7.83		602	pCi/L	0.470	98.4	(0-1)		06/22/1412:13
			Uncert:	+/-0.697			+/-12.1				
			TPU:	+/-0.977			+/-51.6				

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.

GEL LABORATORIES LLC

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QC Summary

Workorder: 350137

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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 or %RPD not applicable.

** Indicates analyte is a surrogate/tracer compound.

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

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

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



July 15, 2014

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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: 352238
SDG: 2014-3500-1

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 06, 2014, and analyzed for HPLC Polynuclear Aromatic Hydrocarbon. 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: 2014-3500
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 352238
SDG: 2014-3500-1

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 352238
SDG # : 2014-3500-1**

July 15, 2014

Laboratory Identification:

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

Summary

Sample receipt The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on June 06, 2014 for analysis. The sample was delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperature was checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following sample:

<u>Laboratory ID</u>	<u>Client ID</u>
352238001	CAPU-14-79429

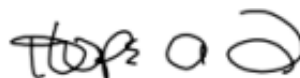
Case Narrative

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: HPLC Polynuclear Aromatic Hydrocarbon.

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



Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 15 July 2014

State	Certification
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC000122013-10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-12-00283, P330-12-00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013-10
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC000122013-10
Nebraska	NE-OS-26-13
Nevada	SC000122014-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-14-9
Utah NELAP	SC000122014-13
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>2014-3500</u>	
Received By: <u>P. Mont</u>		Date Received: <u>6/6/14</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?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0CPM</u>
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Ice bags <u>Blue ice</u> Dry ice <u>None</u> Other (describe) <u>3,4,24c</u> *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>130462966</u>
3 Chain-of-custody documents included with shipment?	<input checked="" type="checkbox"/>			
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>			Sample ID's, containers affected and observed pH: If Preservation added Lot#:
6 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
7 Are Encore containers present?			<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11 Number of containers received match number indicated on COC?			<input checked="" type="checkbox"/>	Sample ID's affected: <u>SEE below</u>
12 Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
14 Carrier and tracking number.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>5908 1777 1332-24</u> <u>5908 1777 1321-4c</u> <u>5908 1777 1343-4c</u> <u>5908 1777 1310-3c</u>

Comments (Use Continuation Form if needed): CAPU-14-79421- Lab rec'd (1) each for 8260b + 8011 EDB.

CAPU-14-79422- Lab rec'd (2) 8260b, chain indicates 4 (1) 8011 EDB chain indicates (2).
CAPU-14-79430 Lab rec'd (3) 8270a instead of (4).

Subject: Sample receipt issue from 06/06/14

From: Pat Dent <Pat.Dent@gel.com>

Date: 6/8/2014 2:59 PM

To: "Keith R. Greene" <kgreene@lanl.gov>

CC: "team.davis" <team.davis@gel.com>, LANL@amrad.com, npatel@lanl.gov

RN#2014-3500

CAPU-14-79430 lab rec'd 3-containers chain indicates 4, for 8270c.

CAPU-14-79421 lab received 1-container each for 8260b and 8011EDB chain indicates 2-each.

CAPU-14-49422 lab received 1-8011EDB container chain indicates 2- and 2-8260b chain indicates 4.

Thanks!!

--

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

ORIGIN ID: SAFA (505) 865-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03

SHIP DATE: 05JUN14
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CAD: 0014176/CAFE2704

LOS ALAMOS, NM 87545
UNITED STATES US

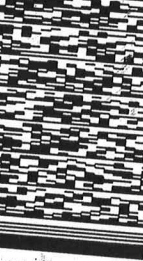
BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100

13111306230126

13111306230126



FedEx
Express



2 of 3

MPS# 5908 1777 1321
Mstr# 5908 1777 1310

XX CHSA

FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

0201

29407
SC-US CHS



Part # 156148-434 R1T2 10/11

ORIGIN ID: SAFA (505) 865-9966
KEITH GREENE
LOS ALAMOS NATL LAB
TA00 BLDG 1237 DPU 03

SHIP DATE: 05JUN14
ACTWGT: 30.0 LB MAN
CAD: 0014176/CAFE2704

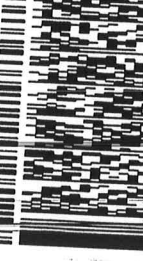
LOS ALAMOS, NM 87545
UNITED STATES US

BILL SENDER

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

CHARLESTON SC 29407
(843) 566-8171
REF: WE991158W100

13111306230126



FedEx
Express



3 of 3

MPS# 5908 1777 1332
Mstr# 5908 1777 1310

XX CHSA

FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

0201

29407
SC-US CHS



Part # 156148-434 R1T2 10/11

SHIP DATE: 05JUN14
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2704

505 665-9966

LAB.
DPU 03

NM 87545
ES US

BILL SENDER

IE DAVIS

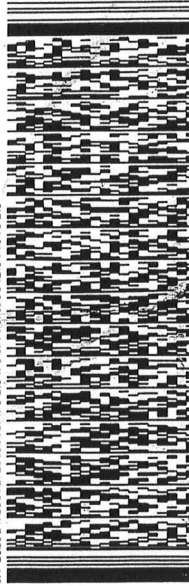
4c
RAL ENGINEERING LAB
J SAVAGE RD

CHARLESTON SC 29407

(43) 566-8171

REF: WE991158W100

FedEx
Express



FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

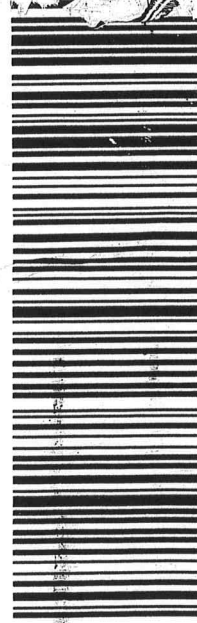
TRK# 5908 1777 1343

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

BILL SENDER

TO VALERIE DAVIS

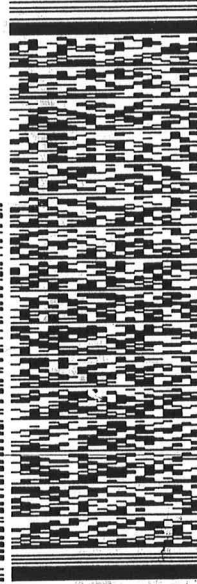
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: WE991158W100

FedEx
Express



FRI - 06 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 5908 1777 1310

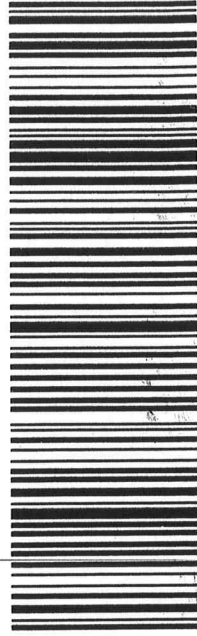
0201

MASTER

XX CHSA

29407

SC-US CHS



Part # 156148-434 R1T2 10/11

518C3/A26D/6F03

113111306230126

Subject: Fwd: Re: FW: R-4 reanalysis
From: Valerie Davis <vsd@gel.com>
Date: 7/15/2014 3:30 PM
To: Hope Taylor <Hope.Taylor@gel.com>

----- Original Message -----

Subject: Re: FW: R-4 reanalysis
Date: Wed, 9 Jul 2014 13:44:52 +0000
From: Patel, Nita <npatel@lanl.gov>
To: 'vsd@gel.com' <vsd@gel.com>
CC: Rogers, David B <slug@lanl.gov>

Hi Val, yes, please rePrep. Thanks, Nita

From: Valerie Davis [<mailto:vsd@gel.com>]
Sent: Wednesday, July 09, 2014 07:27 AM
To: Patel, Nita
Subject: Re: FW: R-4 reanalysis

Good morning Nita!

Please confirm that we need to reprep the sample out of holding.

Thanks,

Valerie

On 7/9/2014 9:06 AM, Patel, Nita wrote:

Good Morning Val, please see below. Thanks, Nita

From: Rogers, David B
Sent: Tuesday, July 08, 2014 3:18 PM
To: Patel, Nita
Cc: Ding, Mei
Subject: R-4 reanalysis

Hi Nita;

Will you request a reanalysis for the SW-846:8310 analytes for CAPU-14-79429?

This is R-4.

Thanks, David

David B. Rogers
Environmental Services Group
Corrective Actions Projects
Environmental Programs Directorate
Los Alamos National Laboratory MS M992
Los Alamos, NM 87545

email slug@lanl.gov
office 505-667-0313
fax 505-606-0503

--

Valerie S. Davis
Project Manager
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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.

HPLC Polynuclear Aromatic Hydrocarbon Analysis

HPLC-PAH
ARS International, LLC (ARSL)
SDG 2014-3500-1

Method/Analysis Information

Procedure: Polynuclear Aromatic Hydrocarbons
Analytical Method: SW846 8310
Prep Method: SW846 3510C
Analytical Batch Number: 1402650
Prep Batch Number: 1402649

Sample Analysis

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

Sample ID	Client ID
352238001	CAPU-14-79429
1203125625	Method Blank (MB)
1203125626	Laboratory Control Sample (LCS)
1203125627	352431002(CAMO-14-81575) Matrix Spike (MS)
1203125629	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

Three low recoveries were observed in the LCS (1203125626). The recovery for Benzo(k)fluoranthene was 66% and the acceptance range is 70-130%, for Benzo(a)pyrene it was 64% and the acceptance range is 70-130%, and for Indeno(1,2,3-cd)pyrene it was 51% and the acceptance range is 57-114%. The low recoveries observed in the LCS and LCSD are attributed to vagaries in the extraction process. Due to depleted sample volume, re-extraction for sample 352238001 (CAPU-14-79429) was not possible. It will be necessary to report all data with this DER.

Laboratory Control Sample Duplicate (LCSD) Recovery

One low recovery was observed in the LCSD (1203125629). The recovery for Benzo(ghi)perylene was 41.9% and the acceptance range is 42-115%. The processing software, Target, flagged this analyte recovery to be outside the acceptance range, while LIMS rounded the recovery up to 42% and did not flag it as non-conforming. The low recoveries observed in the LCS and LCSD are attributed to vagaries in the extraction process. Due to depleted sample volume, re-extraction for sample 352238001 (CAPU-14-79429) was not possible. It will be necessary to report all data with this DER.

LCS/LCSD Relative Percent Difference (RPD) Statement

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

QC Sample Designation

Client sample 352431002 (CAMO-14-81575) from SDG 2014-3714 was chosen for matrix spike analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Technical Information:

Holding Time Specifications

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

Sample 352238001 (CAPU-14-79429) was logged in for extraction and analysis out of holding. It is a re-log of sample 350137003. Target analytes were flagged with a 'h' qualifier and reported.

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 1315561 was generated for this SDG.

Three low recoveries were observed in the LCS (1203125626). The recovery for Benzo(k)fluoranthene was 66% and the acceptance range is 70-130%, for Benzo(a)pyrene it was 64% and the acceptance range is 70-130%, and for Indeno(1,2,3-cd)pyrene it was 51% and the acceptance range is 57-114%. The low recoveries observed in the LCS and LCSD are attributed to vagaries in the extraction process. Due to depleted sample volume, re-extraction for sample 352238001 (CAPU-14-79429) was not possible. It will be necessary to report all data with this DER.

One low recovery was observed in the LCSD (1203125629). The recovery for Benzo(ghi)perylene was 41.9% and the acceptance range is 42-115%. The processing software, Target, flagged this analyte recovery to be outside the acceptance range, while LIMS rounded the recovery up to 42% and did not flag it as non-conforming. The low recoveries observed in the LCS and LCSD are attributed to vagaries in the extraction process. Due to depleted sample volume, re-extraction for sample 352238001 (CAPU-14-79429) was not possible. It will be necessary to report all data with this DER.

Sample 352238001 (CAPU-14-79429) was logged in for extraction and analysis out of holding. It is a re-log of sample 350137003. Target analytes were flagged with a 'h' qualifier and reported.

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.

Due to depleted sample volume, re-extraction for sample 352238001 (CAPU-14-79429) was not possible. It will be necessary to report all data with the appropriate DER.

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: 2014-3500-1 GEL Work Order: 352238

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.
- h Preparation or preservation holding time was exceeded
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 21 JUL 2014

Title: Group Leader

Roadmap for ARSL 2014-3500-1 HPLC_PAH

This roadmap was analyzed by cww on 07-21-2014, 13:21.

This roadmap was reviewed by map on 07-21-2014, 13:31.

This roadmap was packaged by map on 07-21-2014, 17:06.

Sample

exclude	manual	datafile	smpid	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p071714.b/ph5g1707.d	352238001	17-JUL-2014	11:55	2014-3500-1.sub	CAPU-14-79429	1	1402650	A re-log, no more sample

QC Sample

exclude	manual	datafile	smpid	sampletype	injdate	injtime	sublist	clientid	dilution	batchid	comment
<input type="checkbox"/>	N	/chem/hplce.i/p071714.b/ph5g1704.d	1203125625	mb	17-JUL-2014	09:48	2014-3500-1.sub	PAHBLK01	1	1402650	
<input type="checkbox"/>	N	/chem/hplce.i/p071714.b/ph5g1705.d	1203125626	lcs	17-JUL-2014	10:30	2014-3500-1.sub	PAHBLK01LCS	1	1402650	4 low recoveries
<input type="checkbox"/>	N	/chem/hplce.i/p071714.b/ph5g1706.d	1203125629	lcsd	17-JUL-2014	11:13	2014-3500-1.sub	PAHBLK01LCSD	1	1402650	1 low recovery

Sample Data Summary

PAH by HPLC
Certificate of Analysis
Sample Summary

Page 1 of 1

SDG Number: 2014-3500-1	Date Collected: 06/04/2014 12:45	Matrix: W
Lab Sample ID: 352238001	Date Received: 06/06/2014 08:55	
Client Sample: PAH-Relog from 350137003	Client: ARSL004	Project: ESHL00714
Client ID: CAPU-14-79429	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1402650	Inst: HPLCE.I	Dilution: 1
Run Date: 07/17/2014 11:55	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 07/14/2014 06:20	Aliquot: 960 mL	Final Volume: 1 mL
Data File: ph5g1707.d	Column: C-18, DAD/FLD	Level: LOW

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	130	260	49.9	(21% -96%)

QC Summary

PAH by HPLC
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2014-3500-1

Matrix Type: LIQUID

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

Sample ID	Client ID	DFBF %REC
1203125625	MB for batch 1402649	56
1203125626	LCS for batch 1402649	49
1203125629	LCSD for batch 1402649	52
352238001	CAPU-14-79429	50
1203125627	CAMO-14-81575MS	46

Surrogate

Acceptance Limits

DFBF = Decafluorobiphenyl

(21%-96%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2014-3500-1

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1402649

Matrix: WATER

Lab Sample ID 1203125626

Instrument: HPLCE.I

Analysis Date: 07/17/2014 10:30

Dilution: 1

Analyst: CWW

Prep Batch ID: 1402649

Inj. Vol: 20 uL

Batch ID: 1402650

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
91-20-3	LCS Naphthalene	50.0	0.0	31.0	62	54-108
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	36.0	72	50-91
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	34.3	69	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	38.9	78	53-107
86-73-7	LCS Fluorene	50.0	0.0	38.6	77	62-130
85-01-8	LCS Phenanthrene	50.0	0.0	39.2	78	69-130
120-12-7	LCS Anthracene	50.0	0.0	42.3	85	70-130
206-44-0	LCS Fluoranthene	5.00	0.0	3.81	76	70-130
129-00-0	LCS Pyrene	5.00	0.0	4.01	80	70-130
56-55-3	LCS Benzo(a)anthracene	5.00	0.0	3.91	78	70-130
218-01-9	LCS Chrysene	5.00	0.0	4.11	82	70-130
205-99-2	LCS Benzo(b)fluoranthene	5.00	0.0	3.57	71	70-130
207-08-9	LCS Benzo(k)fluoranthene	2.50	0.0	1.64	65 *	70-130
50-32-8	LCS Benzo(a)pyrene	5.00	0.0	3.18	64 *	70-130
193-39-5	LCS Indeno(1,2,3-cd)pyrene	5.00	0.0	2.53	51 *	57-114
53-70-3	LCS Dibenzo(a,h)anthracene	5.00	0.0	1.92	38	30-118
191-24-2	LCS Benzo(ghi)perylene	5.00	0.0	2.10	42	42-115

PAH by HPLC
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2014-3500-1

Sample Type: Laboratory Control Sample Duplicate

Client ID: LCSD for batch 1402649

Matrix: WATER

Lab Sample ID 1203125629

Instrument: HPLCE.I

Analysis Date: 07/17/2014 11:13

Dilution: 1

Analyst: CWW

Prep Batch ID: 1402649

Inj. Vol: 20 uL

Batch ID: 1402650

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	35.1	70	54-108	12	0-26
91-57-6	LCSD 2-Methylnaphthalene	50.0	0.0	40.0	80	50-91	11	0-20
90-12-0	LCSD 1-Methylnaphthalene	50.0	0.0	38.5	77	55-96	12	0-20
208-96-8	LCSD Acenaphthylene	50.0	0.0	41.4	83	52-100	14	0-20
83-32-9	LCSD Acenaphthene	50.0	0.0	44.3	89	53-107	13	0-20
86-73-7	LCSD Fluorene	50.0	0.0	43.8	88	62-130	13	0-20
85-01-8	LCSD Phenanthrene	50.0	0.0	43.8	88	69-130	11	0-20
120-12-7	LCSD Anthracene	50.0	0.0	47.2	94	70-130	11	0-20
206-44-0	LCSD Fluoranthene	5.00	0.0	4.23	85	70-130	11	0-20
129-00-0	LCSD Pyrene	5.00	0.0	4.47	89	70-130	11	0-20
56-55-3	LCSD Benzo(a)anthracene	5.00	0.0	4.38	88	70-130	11	0-20
218-01-9	LCSD Chrysene	5.00	0.0	4.75	95	70-130	15	0-20
205-99-2	LCSD Benzo(b)fluoranthene	5.00	0.0	3.86	77	70-130	8	0-20
207-08-9	LCSD Benzo(k)fluoranthene	2.50	0.0	1.96	78	70-130	18	0-20
50-32-8	LCSD Benzo(a)pyrene	5.00	0.0	3.88	78	70-130	20	0-20
193-39-5	LCSD Indeno(1,2,3-cd)pyrene	5.00	0.0	3.01	60	57-114	17	0-20
53-70-3	LCSD Dibenzo(a,h)anthracene	5.00	0.0	2.03	41	30-118	5	0-20
191-24-2	LCSD Benzo(ghi)perylene	5.00	0.0	2.09	42	42-115	0	0-20

PAH by HPLC
Quality Control Summary
Spike Recovery Report

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SDG Number: 2014-3500-1

Sample Type: Matrix Spike

Client ID: CAMO-14-81575MS

Matrix: W

Lab Sample ID 1203125627

Instrument: HPLCE.I

Analysis Date: 07/17/2014 13:19

Dilution: 1

Analyst: CWW

Prep Batch ID: 1402649

Inj. Vol: 20 uL

Batch ID: 1402650

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	32.3	63	32-104
91-57-6	MS 2-Methylnaphthalene	51.0	0.00 U	37.2	73	56-130
90-12-0	MS 1-Methylnaphthalene	51.0	0.00 U	35.4	69	46-130
208-96-8	MS Acenaphthylene	51.0	0.00 U	37.7	74	26-121
83-32-9	MS Acenaphthene	51.0	0.00 U	40.5	79	27-118
86-73-7	MS Fluorene	51.0	0.00 U	40.4	79	29-123
85-01-8	MS Phenanthrene	51.0	0.00 U	40.8	80	35-126
120-12-7	MS Anthracene	51.0	0.00 U	44.5	87	36-122
206-44-0	MS Fluoranthene	5.10	0.00 U	3.93	77	32-134
129-00-0	MS Pyrene	5.10	0.00 U	4.15	81	32-134
56-55-3	MS Benzo(a)anthracene	5.10	0.00 U	4.17	82	35-129
218-01-9	MS Chrysene	5.10	0.00 U	4.47	88	25-141
205-99-2	MS Benzo(b)fluoranthene	5.10	0.00 U	4.01	79	29-133
207-08-9	MS Benzo(k)fluoranthene	2.55	0.00 U	2.11	83	28-134
50-32-8	MS Benzo(a)pyrene	5.10	0.00 U	4.03	79	25-135
193-39-5	MS Indeno(1,2,3-cd)pyrene	5.10	0.00 U	3.90	76	25-135
53-70-3	MS Dibenzo(a,h)anthracene	5.10	0.00 U	4.36	85	25-133
191-24-2	MS Benzo(ghi)perylene	5.10	0.00 U	3.50	69	27-140

QC Data

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

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SDG Number: 2014-3500-1

Lab Sample ID: 1203125625

Client Sample: QC for batch 1402649

Client ID: MB for batch 1402649

Batch ID: 1402650

Run Date: 07/17/2014 09:48

Prep Date: 07/14/2014 06:20

Data File: ph5g1704.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	140	250	55.9	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3500-1

Lab Sample ID: 1203125626

Client Sample: QC for batch 1402649

Client ID: LCS for batch 1402649

Batch ID: 1402650

Run Date: 07/17/2014 10:30

Prep Date: 07/14/2014 06:20

Data File: ph5g1705.d

Matrix: WATER

Client: ARSL004

Method: SW846 8310

Inst: HPLCE.I

Analyst: CWW

Aliquot: 1000 mL

Column: C-18, DAD/FLD

Project: QC

SOP Ref: GL-OA-E-030

Dilution: 1

Inj. Vol: 20 uL

Final Volume: 1 mL

Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		34.3	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		36.0	ug/L	0.150	0.500
83-32-9	Acenaphthene		38.9	ug/L	0.150	0.500
208-96-8	Acenaphthylene		35.9	ug/L	0.150	0.500
120-12-7	Anthracene		42.3	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		3.91	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		3.18	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		3.57	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.10	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		1.64	ug/L	0.008	0.025
218-01-9	Chrysene		4.11	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		1.92	ug/L	0.016	0.050
206-44-0	Fluoranthene		3.81	ug/L	0.016	0.050
86-73-7	Fluorene		38.6	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		2.53	ug/L	0.016	0.050
91-20-3	Naphthalene		31.0	ug/L	0.150	0.500
85-01-8	Phenanthrene		39.2	ug/L	0.182	0.500
129-00-0	Pyrene		4.01	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	124	250	49.4	(21% -96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3500-1

Lab Sample ID: 1203125629

Client Sample: QC for batch 1402649

Client ID: LCSD for batch 1402649

Batch ID: 1402650

Run Date: 07/17/2014 11:13

Prep Date: 07/14/2014 06:20

Data File: ph5g1706.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		38.5	ug/L	0.218	0.500
91-57-6	2-Methylnaphthalene		40.0	ug/L	0.150	0.500
83-32-9	Acenaphthene		44.3	ug/L	0.150	0.500
208-96-8	Acenaphthylene		41.4	ug/L	0.150	0.500
120-12-7	Anthracene		47.2	ug/L	0.150	0.500
56-55-3	Benzo(a)anthracene		4.38	ug/L	0.016	0.050
50-32-8	Benzo(a)pyrene		3.88	ug/L	0.016	0.050
205-99-2	Benzo(b)fluoranthene		3.86	ug/L	0.016	0.050
191-24-2	Benzo(ghi)perylene		2.09	ug/L	0.016	0.050
207-08-9	Benzo(k)fluoranthene		1.96	ug/L	0.008	0.025
218-01-9	Chrysene		4.75	ug/L	0.016	0.050
53-70-3	Dibenzo(a,h)anthracene		2.03	ug/L	0.016	0.050
206-44-0	Fluoranthene		4.23	ug/L	0.016	0.050
86-73-7	Fluorene		43.8	ug/L	0.150	0.500
193-39-5	Indeno(1,2,3-cd)pyrene		3.01	ug/L	0.016	0.050
91-20-3	Naphthalene		35.1	ug/L	0.150	0.500
85-01-8	Phenanthrene		43.8	ug/L	0.182	0.500
129-00-0	Pyrene		4.47	ug/L	0.016	0.050

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	130	250	52.1	(21%-96%)

PAH by HPLC
Certificate of Analysis
Sample Summary

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SDG Number: 2014-3500-1	Date Collected: 07/09/2014 12:50	Matrix: W
Lab Sample ID: 1203125627	Date Received: 07/11/2014 08:45	
Client Sample: QC for batch 1402649	Client: ARSL004	Project: QC
Client ID: CAMO-14-81575MS	Method: SW846 8310	SOP Ref: GL-OA-E-030
Batch ID: 1402650	Inst: HPLCE.I	Dilution: 1
Run Date: 07/17/2014 13:19	Analyst: CWW	Inj. Vol: 20 uL
Prep Date: 07/14/2014 06:20	Aliquot: 980 mL	Final Volume: 1 mL
Data File: ph5g1709.d	Column: C-18, DAD/FLD	Level: LOW

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		35.4	ug/L	0.222	0.510
91-57-6	2-Methylnaphthalene		37.2	ug/L	0.153	0.510
83-32-9	Acenaphthene		40.5	ug/L	0.153	0.510
208-96-8	Acenaphthylene		37.7	ug/L	0.153	0.510
120-12-7	Anthracene		44.5	ug/L	0.153	0.510
56-55-3	Benzo(a)anthracene		4.17	ug/L	0.0163	0.051
50-32-8	Benzo(a)pyrene		4.03	ug/L	0.0163	0.051
205-99-2	Benzo(b)fluoranthene		4.01	ug/L	0.0163	0.051
191-24-2	Benzo(ghi)perylene		3.50	ug/L	0.0163	0.051
207-08-9	Benzo(k)fluoranthene		2.11	ug/L	0.00816	0.0255
218-01-9	Chrysene		4.47	ug/L	0.0163	0.051
53-70-3	Dibenzo(a,h)anthracene		4.36	ug/L	0.0163	0.051
206-44-0	Fluoranthene		3.93	ug/L	0.0163	0.051
86-73-7	Fluorene		40.4	ug/L	0.153	0.510
193-39-5	Indeno(1,2,3-cd)pyrene		3.90	ug/L	0.0163	0.051
91-20-3	Naphthalene		32.3	ug/L	0.153	0.510
85-01-8	Phenanthrene		40.8	ug/L	0.186	0.510
129-00-0	Pyrene		4.15	ug/L	0.0163	0.051

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
Decafluorobiphenyl	116	255	45.6	(21%-96%)

Miscellaneous Data

DATA EXCEPTION REPORT

Mo.Day Yr. 21-JUL-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: HPLC	Test / Method: SW846 8310	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1402650	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 352238(2014-3500-1),352431(2014-3714) Application Issues: Sample Logged out of Holding Failed Recovery for LCS/LCSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
<p>1. Three low recoveries were observed in the LCS (1203125626). The recovery for Benzo(k)fluoranthene was 66% and the acceptance range is 70-130%, for Benzo(a)pyrene it was 64% and the acceptance range is 70-130%, and for Indeno(1,2,3-cd)pyrene it was 51% and the acceptance range is 57-114%.</p> <p>2. One low recovery was observed in the LCSD (1203125629). The recovery for Benzo(ghi)perylene was 41.9% and the acceptance range is 42-115%. The processing software, Target, flagged this analyte recovery to be outside the acceptance range, while LIMS rounded the recovery up to 42% and did not flag it as non-conforming.</p> <p>3. Sample 352238001 (CAPU-14-79429) was logged in for extraction and analysis out of holding. It is a re-log of sample 350137003.</p>		<p>1. & 2. The low recoveries observed in the LCS and LCSD are attributed to vagaries in the extraction process. Due to depleted sample volume, re-extraction for samples 352238001 (CAPU-14-79429) and 352431002 (CAMO-14-81575) were not possible. It will be necessary to report all data with this DER. One bottle was available for sample 352431010 (CAMO-14-81576) and still within twice the hold, so it was sent back for re-extraction.</p> <p>3. Target analytes were flagged with a 'h' qualifier and reported.</p>	

Originator's Name:

Charles Wilson 21-JUL-14

Data Validator/Group Leader:

Michael Penny 21-JUL-14