General Engineering

Charleston SC

Chain of Custody/Analysis Request

AOEP

COC/Lab Request #: 2015-2166

Client Contact:

Lab Agreement #:

Project Number:

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Days - ☐

14 Days - ☐

21 Days - ☐

28 Days - ☒

Site Name: Los Alamos National Laboratory

Rad Screening Info:

Lab Reporting Limit Type: Sample Quantitation Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	GW-8011+TCP	GW-8260B-SIM	GW-8270D-SIM	MSGP-Hg	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-8081A-HCB	WSP-LL-8151A-PCP	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC						
CAMO-15-102572	Aug 14 2015	12:38	W				1				1							1						
CAMO-15-102596	Aug 14 2015	12:38	W							1		1				1								
CAMO-15-103603	Aug 14 2015	12:38	W																					
CAMO-15-102578	Aug 14 2015	10:14	W	2	2	2	1	2	2		1		1	2	2		1	1						
CAMO-15-102602	Aug 14 2015	10:14	W							1		1				1								
CAMO-15-102566	Aug 14 2015	10:14	W	~~2~~ 1	~~2~~ 1			~~2~~ 1																

Special Instructions:

Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
S Sherwood	S Sherwood	8/17/15 3pm			
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102566

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	8-14-15	OK	FIELD MATRIX:	W	ok
TIME COLLECTED (HH:MM):	1014	↓	MEDIA:	UA	↓
PRS ID:	ok	↓	SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-16r	↓	FIELD PREP:	UF	ok
LOCATION TYPE:	ok	↓	FIELD QC TYPE:	FTB	↓
TOP DEPTH:	↓	↓	SAMPLE USAGE:	QC	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	GW-8011+TCP	40 ML SEPTUM GLASS	1 ~~2~~ 8/14/15	HCL ~~NA2SO4~~ ICE 8/14/15	Y	NA
↓	GW-8260B-SIM	40 ML SEPTUM GLASS	1 ~~2~~ 8/14/15	HCL	↓	↓
↓	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	1 ~~2~~ 8/14/15	HCL	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

8-14-15

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

COLLECTED BY (PRINT): M. Studo & J. Berryhill

RELINQUISHED BY (Printed Name) (Signature) Tanner Bonham	Date/Time 8-14-15 1335	RECEIVED BY (Printed Name) (Signature) R. Green	Date/Time 8/14/15 1:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102572

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	8-14-15	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1238		MEDIA:	UA	
PRS ID:	ok		SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	ok		SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

LOCATION COMMENTS: Sampled 50 ft. from diesel generator

FIELD PARAMETERS:

Dissolved Oxygen	6.36	mg/L	Flow (in gpm)	0.43	GPM	Oxidation-Reduction Potential	151.3	mV
pH	8.63	SU	Specific Conductance	216	uS/cm	Temperature	15.24	deg C
Turbidity	1.9	NTU						

COLLECTED BY (PRINT): M. Sturdo & J. Berryhill

RELINQUISHED BY (Printed Name) (Signature) Tanner Bonham	Date/Time 8-14-15 1335	RECEIVED BY (Printed Name) (Signature) K. Green	Date/Time 8/14/15 1:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102578

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	8-14-15	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1014		MEDIA:	UA	↓
PRS ID:	ok		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-16r		FIELD PREP:	UF	ok
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	
TOP DEPTH:	ok		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	GW-8011+TCP	40 ML SEPTUM GLASS	2	NA2SO4 ICE	Y	NA
↓	GW-8260B-SIM	40 ML SEPTUM GLASS	2	HCL	↓	↓
	GW-8270D-SIM	1 LITER AMBER GLASS	2	ICE		
	MSGP-Hg	1 LITER POLY	1	HNO3		
	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL		
	WSP-8270C-SVOA	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-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: NA

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102578

WORK ORDER: NA

LOCATION COMMENTS: Sampled 50 ft. from Diesel generator

FIELD PARAMETERS:

Dissolved Oxygen	6.28	mg/L	Flow (in gpm)	5.45	GPM	Oxidation-Reduction Potential	188.8	mV
pH	7.99	SU	Specific Conductance	181	uS/cm	Temperature	20.95	deg C
Turbidity	0.4	NTU						

COLLECTED BY (PRINT): M. Stredo & J. Berryhill

RELINQUISHED BY Tanner Bonham **(Printed Name)** **(Signature)**	**Date/Time** 8-14-15 1335	**RECEIVED BY** K. Green **(Printed Name)** **(Signature)**	**Date/Time** 8/14/15 1135
RELINQUISHED BY **(Printed Name)** **(Signature)**	**Date/Time**	**RECEIVED BY** **(Printed Name)** **(Signature)**	**Date/Time**

Report Date: 07/31/2015

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102596

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	8-14-15	↓	FIELD MATRIX:	WG	↓
TIME COLLECTED (HH:MM):	1238	↓	MEDIA:	UA	↓
PRS ID:	ok	↓	SAMPLE TECH CODE:	UA	RSP
LOCATION ID:	MCOI-5	↓	FIELD PREP:	F	↓
LOCATION TYPE:	MON	↓	FIELD QC TYPE:	REG	↓
TOP DEPTH:	↓	↓	SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2	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						

8-14-15

COLLECTED BY (PRINT): M. Sladd & J. Berryhill

RELINQUISHED BY (Printed Name) (Signature) Tanner Bonham	**Date/Time** 8-14-15 1335	**RECEIVED BY (Printed Name) (Signature)** K. Green	**Date/Time** 8/14/15 1:35
RELINQUISHED BY (Printed Name) (Signature)	**Date/Time**	**RECEIVED BY (Printed Name) (Signature)**	**Date/Time**

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 10310

EVENT NAME: Mortandad/Sandia (Chromium and General Surveillance) MY2015 Q4 Watershed Sampling_Mortandad

SAMPLE ID: CAMO-15-102602

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYY):	8-14-15	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1014		MEDIA:	UA	↓
PRS ID:	OK		SAMPLE TECH CODE:	UA	GSP
LOCATION ID:	R-16r		FIELD PREP:	F	OK
LOCATION TYPE:	MON		FIELD QC TYPE:	REG	↓
TOP DEPTH:	OK		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
↓	WSP-GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP-NH3+NO3/NO2	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						

8-14-15

COLLECTED BY (PRINT): M. Skado & J. Berryhill

RELINQUISHED BY (Printed Name) (Signature) Tanner Bonham	Date/Time 8-14-15 1335	RECEIVED BY (Printed Name) (Signature) K. Green	Date/Time 8/14/15 1:35
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

DATA VALIDATION REPORT

Chain Of Custody No. 2015-2166

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
379487	EPA:120.1	2				
379487	EPA:150.1	2				
379487	EPA:160.1	2				
379487	EPA:245.2	4				
379487	EPA:300.0	2				
379487	EPA:310.1	2				
379487	EPA:335.4	2				
379487	EPA:350.1	2				
379487	EPA:351.2	2				
379487	EPA:353.2	2				
379487	EPA:365.4	2				
379487	EPA:900	1				
379487	EPA:901.1	1				
379487	EPA:905.0	1				
379487	HASL-300:AM-241	1				
379487	HASL-300:ISOPU	1				
379487	HASL-300:ISOU	1				
379487	SM:A2340B	2				
379487	SW-846:6010C	2				
379487	SW-846:6020	2				
379487	SW-846:6850	2				
379487	SW-846:8011	1		1		
379487	SW-846:8081B	1				
379487	SW-846:8151A	1				
379487	SW-846:8260B	1		1		
379487	SW-846:8260B_SIM	1		1		
379487	SW-846:8270D	1				
379487	SW-846:8270DGCMS_SIM	1				
379487	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
379487	EPA:120.1	1504613	1504613	2										1				1			
379487	EPA:150.1	1503693	1503693	2										1				1			
379487	EPA:160.1	1502146	1502146	2					1					1				1			
379487	EPA:245.2	1503458	1503456	4					1	2				1				2			
379487	EPA:300.0	1502419	1502419	2					1					1				1			
379487	EPA:310.1	1502902	1502902	2					2					2							
379487	EPA:335.4	1501478	1501477	1					1	1				1				1			
379487	EPA:335.4	1502152	1502151	1					1	1				1				1			
379487	EPA:350.1	1501130	1501129	2					1	1				1				1			
379487	EPA:351.2	1501128	1501127	2					1	1				1				1			
379487	EPA:353.2	1501554	1501554	2					1					1				1			
379487	EPA:365.4	1501776	1501774	2					1	1				1				1			
379487	EPA:900	1504242	1504242	1					1	1	1			1				1			
379487	EPA:901.1	1501923	1501923	1					1					1				1			
379487	EPA:905.0	1504241	1504241	1					1	1				1				1			
379487	HASL-300:AM-241	1502314	1502314	1					1					1				1			
379487	HASL-300:ISOPU	1502316	1502316	1					1					1				1			
379487	HASL-300:ISOU	1502317	1502317	1					1					1				1			
379487	SM:A2340B	1505876	1505876	2																	
379487	SW-846:6010C	1501339	1501338	2					1	1				1				1			
379487	SW-846:6020	1501345	1501344	2					1	1				1				1			
379487	SW-846:6850	1502487	1502486	2					1	1	1			1							
379487	SW-846:8011	1501417	1501416	1		1			1					1	1						
379487	SW-846:8081B	1501983	1501978	1					1	1				1	1						
379487	SW-846:8081B	1502971	1502970	1					1	1				1	1						
379487	SW-846:8151A	1501992	1501991	1					1	1				1	1						
379487	SW-846:8260B	1501645	1501645	1		1			2					4							
379487	SW-846:8260B_SIM	1502242	1502242	1		1			1					1							
379487	SW-846:8270D	1502077	1502076	1					1	1	1			1							
379487	SW-846:8270DGCMS_SIM	1502080	1502079	1					1	1	1			1							

DATA VALIDATION REPORT

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
379487	SW-846:9060	1501404	1501404	2					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
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CASA-15-102655	1203385407	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203385406	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102596	1203382930	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203382926	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CASA-15-102654	1203378786	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1203378785	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203378783	MB	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102572	1203382329	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102572	1203382331	MS	0	0	1	0
EPA:245.2	INORGANIC	CAMO-15-102572	379487001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102578	379487004	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102602	1203382330	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAMO-15-102602	1203382332	MS	0	0	1	0
EPA:245.2	INORGANIC	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203382328	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203382327	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102596	1203379529	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203379528	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203379527	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	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:310.1	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203381069	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203381074	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203381068	MB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1203381073	MB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102572	1203378800	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102572	1203378803	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102572	379487001	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-15-102578	379487004	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203377074	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203378799	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203377073	MB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203378798	MB	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	WST22-15-103884	1203377075	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	WST22-15-103884	1203377078	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102596	1203377291	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102596	1203377293	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203376190	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203376189	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102572	1203376185	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102572	1203376187	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102572	379487001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-15-102578	379487004	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203376184	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203376183	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203377236	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203377235	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	WST22-15-103884	1203377237	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102596	1203377851	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102596	1203377852	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102596	379487002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-15-102602	379487007	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203377850	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203377849	MB	1	0	0	0
EPA:900	RAD	CAMO-15-102578	379487004	REG	2	0	0	0
EPA:900	RAD	CASA-15-102635	1203384418	DUP	2	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
EPA:900	RAD	CASA-15-102635	1203384419	MS	0	0	2	0
EPA:900	RAD	CASA-15-102635	1203384420	MSD	0	0	2	0
EPA:900	RAD	LCS	1203384421	LCS	0	0	2	0
EPA:900	RAD	MB	1203384417	MB	2	0	0	0
EPA:901.1	RAD	CAMO-15-102578	379487004	REG	5	0	0	0
EPA:901.1	RAD	CASA-15-102635	1203378218	DUP	5	0	0	0
EPA:901.1	RAD	LCS	1203378219	LCS	0	0	3	0
EPA:901.1	RAD	MB	1203378217	MB	5	0	0	0
EPA:905.0	RAD	CAMO-15-102570	1203384414	DUP	1	0	0	0
EPA:905.0	RAD	CAMO-15-102570	1203384415	MS	0	0	1	0
EPA:905.0	RAD	CAMO-15-102578	379487004	REG	1	0	0	0
EPA:905.0	RAD	LCS	1203384416	LCS	0	0	1	0
EPA:905.0	RAD	MB	1203384413	MB	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102578	1203379247	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAMO-15-102578	379487004	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1203379248	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1203379246	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102578	1203379250	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAMO-15-102578	379487004	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1203379251	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1203379249	MB	2	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102578	1203379253	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAMO-15-102578	379487004	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1203379254	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1203379252	MB	3	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102596	379487002	REG	1	0	0	0
SM:A2340B	INORGANIC	CAMO-15-102602	379487007	REG	1	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102596	1203376713	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102596	1203376714	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAMO-15-102596	379487002	REG	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-15-102602	379487007	REG	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203376712	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203376711	MB	17	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102596	1203376731	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102596	1203376732	MS	0	0	11	0
SW-846:6020	INORGANIC	CAMO-15-102596	379487002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAMO-15-102602	379487007	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203376730	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203376729	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102596	379487002	REG	1	0	0	0

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Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102600	1203379718	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102600	1203379719	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-15-102602	379487007	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203379717	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203379716	MB	1	0	0	0
SW-846:8011	VOC	CAMO-15-102566	379487008	FTB	3	1	0	0
SW-846:8011	VOC	CAMO-15-102578	379487003	REG	3	1	0	0
SW-846:8011	VOC	LCS	1203376911	LCS	0	1	3	0
SW-846:8011	VOC	LCSD	1203376912	LCSD	0	1	3	0
SW-846:8011	VOC	MB	1203376910	MB	3	1	0	0
SW-846:8081B	PESTPCB	CAMO-15-102570	1203381194	MS	0	2	1	0
SW-846:8081B	PESTPCB	CAMO-15-102578	379487005	REG	2	4	0	0
SW-846:8081B	PESTPCB	CASA-15-102634	1203378389	MS	0	2	1	0
SW-846:8081B	PESTPCB	LCS	1203378388	LCS	0	2	1	0
SW-846:8081B	PESTPCB	LCS	1203381193	LCS	0	2	1	0
SW-846:8081B	PESTPCB	LCSD	1203378391	LCSD	0	2	1	0
SW-846:8081B	PESTPCB	LCSD	1203381196	LCSD	0	2	1	0
SW-846:8081B	PESTPCB	MB	1203378387	MB	1	2	0	0
SW-846:8081B	PESTPCB	MB	1203381192	MB	1	2	0	0
SW-846:8151A	HERB	CAMO-15-102578	379487006	REG	1	1	0	0
SW-846:8151A	HERB	CASA-15-102634	1203378413	MS	0	1	1	0
SW-846:8151A	HERB	LCS	1203378412	LCS	0	1	1	0
SW-846:8151A	HERB	LCSD	1203378417	LCSD	0	1	1	0
SW-846:8151A	HERB	MB	1203378411	MB	1	1	0	0
SW-846:8260B	VOC	CAMO-15-102566	379487009	FTB	78	3	0	0
SW-846:8260B	VOC	CAMO-15-102578	379487004	REG	78	3	0	0
SW-846:8260B	VOC	LCS	1203377541	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203377542	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203378423	LCS	0	3	68	0
SW-846:8260B	VOC	LCS	1203378424	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203377540	MB	78	3	0	0
SW-846:8260B	VOC	MB	1203378422	MB	78	3	0	0
SW-846:8260B_SIM	VOC	CAMO-15-102566	379487009	FTB	3	3	0	0
SW-846:8260B_SIM	VOC	CAMO-15-102578	379487004	REG	3	3	0	0
SW-846:8260B_SIM	VOC	LCS	1203379079	LCS	0	3	3	0
SW-846:8260B_SIM	VOC	MB	1203379078	MB	3	3	0	0
SW-846:8270D	SVOC	CAMO-15-102578	379487004	REG	80	6	0	0
SW-846:8270D	SVOC	CASA-15-102634	1203378629	MS	0	6	76	0
SW-846:8270D	SVOC	CASA-15-102634	1203378630	MSD	0	6	76	0
SW-846:8270D	SVOC	LCS	1203378628	LCS	0	6	76	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	1203378627	MB	80	6	0	0
SW-846:8270DGCMS_SIM	SVOC	CAMO-15-102578	1203378633	MS	0	1	27	0
SW-846:8270DGCMS_SIM	SVOC	CAMO-15-102578	1203378634	MSD	0	1	27	0
SW-846:8270DGCMS_SIM	SVOC	CAMO-15-102578	379487004	REG	27	1	0	0
SW-846:8270DGCMS_SIM	SVOC	LCS	1203378632	LCS	0	1	27	0
SW-846:8270DGCMS_SIM	SVOC	MB	1203378631	MB	27	1	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102572	379487001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102578	1203377348	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-15-102578	379487004	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203376882	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203376881	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

6. Any surrogate recoveries outside the control limits?

Field Sample ID	Lab Sample ID	Analytical Method	Parameter Name	Analysis Lot ID	Analysis Date	Spike Recovery	Upper Limit	Lower Limit	Rejection Limit
CAMO-15-102578	379487005	SW-846:8081B	PCB-209	1501983	08-23-2015	31	128	36	
CAMO-15-102578	1203378633	SW-846:8270DGCMS_SIM	5-alpha-Androstane	1502080	08-24-2015	18	112	35	
CAMO-15-102578	1203378634	SW-846:8270DGCMS_SIM	5-alpha-Androstane	1502080	08-24-2015	21	112	35	
CAMO-15-102578	379487004	SW-846:8270DGCMS_SIM	5-alpha-Androstane	1502080	08-24-2015	27	112	35	

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

DATA VALIDATION REPORT

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
CAMO-15-102596	1203377293		EPA:350.1	Ammonia as Nitrogen	1501129	08-20-2015	W	89.7		110	90	10		
CAMO-15-102596	1203377293		EPA:350.1	Ammonia as Nitrogen	1501129	08-20-2015	W	89.7		110	90	10		
CAMO-15-102572	1203376187		EPA:351.2	Total Kjeldahl Nitrogen	1501127	08-25-2015	W	81.3		110	90	10		
CAMO-15-102572	1203376187		EPA:351.2	Total Kjeldahl Nitrogen	1501127	08-25-2015	W	81.3		110	90	10		
CAMO-15-102578	1203378633	1203378634	SW-846:8270DGCMS_SIM	Benzidine	1502079	08-24-2015	W	17	17	130	40		4	30
CAMO-15-102578	1203378633	1203378634	SW-846:8270DGCMS_SIM	Benzo(g,h,i)perylene	1502079	08-24-2015	W	37	45	124	39		19	20

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
1203377541		SW-846:8260B	Diethyl Ether	1501645	08-19-2015	W	121		120	72		10		
1203378632		SW-846:8270DGCMS_SIM	Benzidine	1502079	08-24-2015	W	26		130	50				

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

Field Sample ID	Lab Sample ID	LD Lab Sample ID	Analytical Method	Parameter Name	Sample Matrix	Lab Result	LD Lab Result	Lab Units	Detect Flag	LD Detect Flag	RPD	RPD Limit
CAMO-15-102596	379487002	1203377291	EPA:350.1	Ammonia as	W	0.0669	0.0923	mg/L	Y	Y	31.9	20

DATA VALIDATION REPORT

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	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
MCOI-5	2015-2166	CAMO-15-102572	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	U	UJ	I6a	N	0.100	mg/L	0.100	mg/L			W	08/14/2015		1501128	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Acenaphthene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Acenaphthylene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N	-.000000001	pCi/L	-.0000000011	pCi/L	0.0356	0.00627	W	08/14/2015		1502314	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Anthracene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzidine	U	UJ	SV3a	N	2.50	ug/L	2.50	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzo(a)anthracene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzo(a)pyrene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzo(b)fluoranthene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzo(g,h,i)perylene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Benzo(k)fluoranthene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Bis(2-chloroethyl)ether	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N	-1.7	pCi/L	-1.7	pCi/L	4.06	1.33	W	08/14/2015		1501923	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Chloronaphthalene[2-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Chrysene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N	-1.15	pCi/L	-1.15	pCi/L	3.47	1.03	W	08/14/2015		1501923	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Dibenz(a,h)anthracene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Dichlorobenzidine[3,3'-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Fluoranthene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Fluorene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N	.409	pCi/L	.409	pCi/L	2.82	0.736	W	08/14/2015		1504242	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	PESTPCB	SW-846:8081B	Hexachlorobenzene	U	UJ	P3a	N	0.0211	ug/L	0.0211	ug/L			W	08/14/2015		1501983	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Indeno(1,2,3-cd)pyrene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Methylnaphthalene[1-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y

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Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Methylnaphthalene[2-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Naphthalene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N	2.19	pCi/L	2.19	pCi/L	7.96	2.26	W	08/14/2015		1501923	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Nitroso-di-n-butylamine[N-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Nitroso-di-n-propylamine[N-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Nitrosodiethylamine[N-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Nitrosodimethylamine[N-]	U	UJ	SV3a	N	0.200	ug/L	0.200	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Nitrosopyrrolidine[N-]	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Phenanthrene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N	-.00228	pCi/L	-.00228	pCi/L	0.0457	0.0109	W	08/14/2015		1502316	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N	.00684	pCi/L	.00684	pCi/L	0.0408	0.0131	W	08/14/2015		1502316	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N	25.7	pCi/L	25.7	pCi/L	38.8	21.3	W	08/14/2015		1501923	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	SVOC	SW-846:8270DGCMS	Pyrene	U	UJ	SV3a	N	0.100	ug/L	0.100	ug/L			W	08/14/2015		1502080	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N	-1.05	pCi/L	-1.05	pCi/L	4.25	1.24	W	08/14/2015		1501923	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N	.127	pCi/L	.127	pCi/L	0.491	0.144	W	08/14/2015		1504241	VAL	Y
R-16r	2015-2166	CAMO-15-102578	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N	.084	pCi/L	.084	pCi/L	0.0996	0.020	W	08/14/2015		1502317	VAL	Y
MCOI-5	2015-2166	CAMO-15-102596	REG	INIT	GENERAL CHEMISTRY	EPA:350.1	Ammonia as Nitrogen		J-	I6a	Y	0.0669	mg/L	0.0669	mg/L			W	08/14/2015		1501130	VAL	Y

Reason Code	Description
I6a	The associated matrix spike recovery was below the lower acceptance limit (LAL) but >10%. Follow the external laboratory limits located within the associated data package.
J_LAB	The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL
NQ	The analytical laboratory did not qualifiy the analyte as not detected and/or any other standard qualifire. The analyte is detected in the sample.
P3a	The surrogate is < the Lower Acceptance Level (LAL) but >=10%R. Follow the external laboratory limits located within the associated data package.
R5	Analyte is not detected because the amount reported is less than the MDC.
SV3a	The surrogate is < the Lower Acceptance Level (LAL) but >=10%R. 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.

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102566	R-16r	FTB	SW-846:8011	0	3
CAMO-15-102566	R-16r	FTB	SW-846:8260B	0	78
CAMO-15-102566	R-16r	FTB	SW-846:8260B_SIM	0	3
CAMO-15-102572	MCOI-5	REG	EPA:245.2	0	1
CAMO-15-102572	MCOI-5	REG	EPA:335.4	0	1
CAMO-15-102572	MCOI-5	REG	EPA:351.2	0	1
CAMO-15-102572	MCOI-5	REG	SW-846:9060	0	1
CAMO-15-102578	R-16r	REG	EPA:245.2	0	1
CAMO-15-102578	R-16r	REG	EPA:335.4	0	1
CAMO-15-102578	R-16r	REG	EPA:351.2	0	1
CAMO-15-102578	R-16r	REG	EPA:900	0	2
CAMO-15-102578	R-16r	REG	EPA:901.1	0	5
CAMO-15-102578	R-16r	REG	EPA:905.0	0	1
CAMO-15-102578	R-16r	REG	HASL-300:AM-241	0	1
CAMO-15-102578	R-16r	REG	HASL-300:ISOPU	0	2
CAMO-15-102578	R-16r	REG	HASL-300:ISOU	0	3
CAMO-15-102578	R-16r	REG	SW-846:8011	0	3
CAMO-15-102578	R-16r	REG	SW-846:8081B	0	2
CAMO-15-102578	R-16r	REG	SW-846:8151A	0	1
CAMO-15-102578	R-16r	REG	SW-846:8260B	0	78
CAMO-15-102578	R-16r	REG	SW-846:8260B_SIM	0	3
CAMO-15-102578	R-16r	REG	SW-846:8270D	0	80
CAMO-15-102578	R-16r	REG	SW-846:8270DGCMS_SIM	0	27
CAMO-15-102578	R-16r	REG	SW-846:9060	0	1
CAMO-15-102596	MCOI-5	REG	EPA:120.1	0	1
CAMO-15-102596	MCOI-5	REG	EPA:150.1	0	1
CAMO-15-102596	MCOI-5	REG	EPA:160.1	0	1
CAMO-15-102596	MCOI-5	REG	EPA:245.2	0	1
CAMO-15-102596	MCOI-5	REG	EPA:300.0	0	4
CAMO-15-102596	MCOI-5	REG	EPA:310.1	0	2
CAMO-15-102596	MCOI-5	REG	EPA:350.1	0	1
CAMO-15-102596	MCOI-5	REG	EPA:353.2	0	1
CAMO-15-102596	MCOI-5	REG	EPA:365.4	0	1
CAMO-15-102596	MCOI-5	REG	SM:A2340B	0	1
CAMO-15-102596	MCOI-5	REG	SW-846:6010C	0	17
CAMO-15-102596	MCOI-5	REG	SW-846:6020	0	11
CAMO-15-102596	MCOI-5	REG	SW-846:6850	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-15-102602	R-16r	REG	EPA:120.1	0	1
CAMO-15-102602	R-16r	REG	EPA:150.1	0	1
CAMO-15-102602	R-16r	REG	EPA:160.1	0	1
CAMO-15-102602	R-16r	REG	EPA:245.2	0	1
CAMO-15-102602	R-16r	REG	EPA:300.0	0	4
CAMO-15-102602	R-16r	REG	EPA:310.1	0	2
CAMO-15-102602	R-16r	REG	EPA:350.1	0	1
CAMO-15-102602	R-16r	REG	EPA:353.2	0	1
CAMO-15-102602	R-16r	REG	EPA:365.4	0	1
CAMO-15-102602	R-16r	REG	SM:A2340B	0	1
CAMO-15-102602	R-16r	REG	SW-846:6010C	0	17
CAMO-15-102602	R-16r	REG	SW-846:6020	0	11
CAMO-15-102602	R-16r	REG	SW-846:6850	0	1

GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

September 10, 2015

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: 379487
SDG: 2015-2166

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on August 18, 2015, and analyzed for GC Semivolatile Herbicide, GC Semivolatile Pesticide, GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 2015-2166
Enclosures

ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Work Order #: 379487
SDG: 2015-2166

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Case Narrative

Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL-WQH Groundwater Samples
Workorder #: 379487
SDG # : 2015-2166

September 10, 2015

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 August 18, 2015 for analysis. The samples were 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 temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Sample Identification The laboratory received the following samples:

Laboratory ID	Client ID
379487001	CAMO-15-102572
379487002	CAMO-15-102596
379487003	CAMO-15-102578
379487004	CAMO-15-102578
379487005	CAMO-15-102578
379487006	CAMO-15-102578
379487007	CAMO-15-102602
379487008	CAMO-15-102566
379487009	CAMO-15-102566

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, 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 10 September 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
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 SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−15−10
Utah NELAP	SC000122015−18
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation

379487

General Engineering
Charleston SC

Chain of Custody/Analysis Request

AOEP

COC/Lab Request #: 2015-2166
Page 1 of 1

Client Contact:

Lab Agreement #:

Project Number:

Analysis Turnaround Time:
24 Hour - ☐ Other - ☐
7 Days - ☐
14 Days - ☐
21 Days - ☐
28 Days - ☒

Site Name: Los Alamos National Laboratory

Rad Screening Info:

Lab Reporting Limit Type: Sample Quantitation Limit

Field Sample ID	Sample Date	Sample Time	Sample Matrix	GW-8011+TCP	GW-8260B-SIM	GW-8270D-SIM	MSGP-Hg	WSP-8260B-VOA	WSP-8270C-SVOA	WSP-All Metals	WSP-CN(T)	WSP-GENINORG+PerChlorate	WSP-GrossA/B	WSP-LL-8081A-HCB	WSP-LL-8151A-PCP	WSP-NH3+NO3/NO2+PO4	WSP-RAD	WSP-TKN+TOC						
CAMO-15-102572	Aug 14 2015	12:38	W				1				1							1						
CAMO-15-102596	Aug 14 2015	12:38	W							1		1				1								
CAMO-15-103603	Aug 14 2015	12:38	W																					
CAMO-15-102578	Aug 14 2015	10:14	W	2	2	2	1	2	2		1		1	2	2		1	1						
CAMO-15-102602	Aug 14 2015	10:14	W							1		1				1								
CAMO-15-102566	Aug 14 2015	10:14	W	~~2~~ 1	~~2~~ 1			~~2~~ 1																

Special Instructions:

Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
S Sherwood	S Sherwood	8/17/15 3pm	B. Luthman	Bnelle Luthman	8/18/15 0835
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:
Relinquished by:	Print Name:	Date/Time:	Received by:	Print Name:	Date/Time:

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: LANL	**SDG/AR/COC/Work Order:** 2015-2166
Received By: Brielle Luthman	**Date Received:** 8/18/15 0835

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

	Sample Receipt Criteria	**Yes**	**NA**	**No**	**Comments/Qualifiers (Required for Non-Conforming Items)**
1	Shipping containers received intact and sealed?	/			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	/			2° Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	/			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): E50320158 35
3	Chain of custody documents included with shipment?	/			
4	Sample containers intact and sealed?	/			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	/			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples (EPA 6850) have headspace as required?		/		Sample ID's and containers affected:
7	VOA vials free of headspace (defined as < 6mm bubble)?	/			Sample ID's and containers affected:
8	Are Encore containers present?			/	(If yes, immediately deliver to Volatiles laboratory)
9	Samples received within holding time?	/			ID's and tests affected:
10	Sample ID's on COC match ID's on bottles?	/			Sample ID's and containers affected:
11	Date & time on COC match date & time on bottles?	/			Sample ID's affected:
12	Number of containers received match number indicated on COC?	/			Sample ID's affected:
13	Are sample containers identifiable as GEL provided?			/	
14	COC form is properly signed in relinquished/received sections?	/			
15	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 5908 1779 3381 5908 1779 3392

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 8/18/15 Page 1 of 1 GL-CHL-SR-001 Rev 1

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: LANL	**SDG/AR/COC/Work Order:** 2015-21666
Received By: Brielle Luthman	**Date Received:** 8/21/15 0855

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

	Sample Receipt Criteria	**Yes**	**NA**	**No**	**Comments/Qualifiers (Required for Non-Conforming Items)**
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): E5032015835
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples (EPA 6850) have headspace as required?	✓			Sample ID's and containers affected:
7	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected:
8	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
9	Samples received within holding time?	✓			ID's and tests affected:
10	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
11	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
12	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
13	Are sample containers identifiable as GEL provided?			✓	
14	COC form is properly signed in relinquished/received sections?	✓			
15	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 5908 1779 3554 -4° 5908 1779 3598 -2°

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials BL Date 8/21/15 Page 1 of 1 GL-CHL-SR-001 Rev 1

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 17AUG15
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MRSW12CHWCE0

521C1/FECA/GF03

FedEx Express

J1412140730011v

1 of 3

TRK# 0201 5908 1779 3381

MASTER

TUE - 18 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

29407
SC-US CHS

2

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 17AUG15
ACTWGT: 45.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
-8171
RSW12CHWCE0

521C1/FECA/GF03

FedEx Express

J1412140730011v

2 of 3

MPS 023 5908 1779 3392

Mstr# 5908 1779 3381

0201

TUE - 18 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

29407
SC-US CHS

2

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 20AUG15
ACTWGT: 40.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: WE991155W300

521C1/FECA/6F03

FedEx Express

J412140730010v

3 of 3
MPS# 0263 5908 1779 3635
Mstr# 5908 1779 3613

0201

FRI - 21 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

4

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 20AUG15
ACTWGT: 45.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MRGW04BAGWE0

521C1/FECA/6F03

FedEx Express

J412140730010v

1 of 2
TRK# 0201 5908 1779 3598
MASTER

FRI - 21 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

2

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 20AUG15
ACTWGT: 64.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: WE6L11551000

521C1/FECA/6F03

FedEx Express

J141214073001uv

TRK# 0201 5908 1779 3554

FRI - 21 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

4°

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 20AUG15
ACTWGT: 51.0 LB MAN
CAD: 0014176/CAFE2807

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407
(843) 556-8171
REF: MRGW04BAGWE0

521C1/FECA/6F03

FedEx Express

J141214073001uv

2 of 3

MPS# 0263 5908 1779 3576
Mstr# 5908 1779 3565

0201

FRI - 21 AUG 10:30A
PRIORITY OVERNIGHT

X7 CHSA

4°

29407
SC-US CHS

Part # 156148-434 RIT2 10/11

Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

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

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

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 8260B DOE-AL
Analytical Batch Number:	1501645 1502242

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
379487004	CAMO-15-102578
379487009	CAMO-15-102566
1203377540	Method Blank (MB)
1203377541	Laboratory Control Sample (LCS)
1203377542	Laboratory Control Sample (LCS)
1203377543	379330002(CAMO-15-102569) Post Spike (PS)
1203377544	379330002(CAMO-15-102569) Post Spike (PS)
1203377545	379330002(CAMO-15-102569) Post Spike Duplicate (PSD)
1203377546	379330002(CAMO-15-102569) Post Spike Duplicate (PSD)
1203379078	Method Blank (MB)
1203379079	Laboratory Control Sample (LCS)
1203379080	379330002(CAMO-15-102569) Post Spike (PS)
1203379081	379330002(CAMO-15-102569) Post Spike Duplicate (PSD)

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 data results reported met all SOP and method criteria, unless otherwise discussed below.

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.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate

recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

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

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

Quality Control (QC) Information

Blank (MB) Statement
The 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 (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported.

Sample	Analyte	Value
1203377541 (LCS)	Ethyl ether	121* (72%-120%)

QC Sample Designation
Samples 379330002 (CAMO-15-102569) were designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The matrix spike (MS) and matrix spike duplicate (MSD) 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
All samples in this SDG 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 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

Data Exception (DER) Documentation
A data exception report (DER) 1440930 was generated for sample 1203377541 (LCS) in this SDG/batch.

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

TIC Comment
Tentatively identified compounds (TIC) may be requested for samples 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, were included on the Sample Data Summary (Form 1) and included with the sample raw data.

Additional Comments
Additional comments were not required for this SDG.

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

System Configuration

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

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA1.I	Agilent 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	RTX-624	Restek, 60m x 0.25mm x 1.4um	Trap 10
VOA5.I	Agilent 6890N/5975 GC/MS w/ OI 4560/Archon Autosampler	HP6890N/HP5975	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all 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: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
B The target analyte was detected in the associated blank.
J Value is estimated
U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: Erin Haubert **Name: Erin Haubert**

Date: 11 SEP 2015 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 14:59**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 14:59**				
Data File:	**081915V1\1W313.D**	**Column:**	**DB-624**		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 14:59**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 14:59**				
Data File:	**081915V1\1W313.D**	**Column:**	**DB-624**		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 14:59**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 14:59**				
Data File:	**081915V1\1W313.D**	**Column:**	**DB-624**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.7	50.0	ug/L	99.4	(77%-123%)
Bromofluorobenzene	52.9	50.0	ug/L	106	(80%-120%)
Toluene-d8	50.2	50.0	ug/L	100	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 14:04**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 14:04**				
Data File:	**082415V5\5X112.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene	U	0.400	ug/L	0.100	0.400
107-02-8	Acrolein	U	2.00	ug/L	0.500	2.00
107-13-1	Acrylonitrile	U	2.00	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.1	50.0	ug/L	94.3	(77%-123%)
Bromofluorobenzene	49.7	50.0	ug/L	99.3	(80%-120%)
Toluene-d8	49.7	50.0	ug/L	99.4	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.32	9.43	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487009**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8260**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102566**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 13:56**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 13:56**				
Data File:	**081915V1\1W311.D**	**Column:**	**DB-624**		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487009**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8260**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102566**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 13:56**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 13:56**				
Data File:	**081915V1\1W311.D**	**Column:**	**DB-624**		

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487009**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8260**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102566**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 13:56**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 13:56**				
Data File:	**081915V1\1W311.D**	**Column:**	**DB-624**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.0	50.0	ug/L	104	(77%-123%)
Bromofluorobenzene	51.2	50.0	ug/L	102	(80%-120%)
Toluene-d8	48.1	50.0	ug/L	96.1	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487009**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8260**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102566**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 17:19**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 17:19**				
Data File:	**082415V5\5X119.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene	U	0.400	ug/L	0.100	0.400
107-02-8	Acrolein	U	2.00	ug/L	0.500	2.00
107-13-1	Acrylonitrile	U	2.00	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.6	50.0	ug/L	105	(77%-123%)
Bromofluorobenzene	52.2	50.0	ug/L	104	(80%-120%)
Toluene-d8	51.0	50.0	ug/L	102	(80%-120%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	3.32	7.73	ug/L	0	J

Quality Control Summary

Volatile

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203379079	LCS for batch 1502242	102	99	100
1203379078	MB for batch 1502242	103	99	99
379487004	CAMO-15-102578	94	99	99
379487009	CAMO-15-102566	105	102	104
1203379080	CAMO-15-102569PS	105	100	103
1203379081	CAMO-15-102569PSD	108	105	107

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(77%-123%)
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

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203377541	LCS for batch 1501645	101	96	101
1203377542	LCS for batch 1501645	96	99	100
1203377540	MB for batch 1501645	99	103	102
379487009	CAMO-15-102566	104	96	102
379487004	CAMO-15-102578	99	100	106
1203377543	CAMO-15-102569PS	97	96	100
1203377545	CAMO-15-102569PSD	97	100	100
1203377544	CAMO-15-102569PS	94	95	103
1203377546	CAMO-15-102569PSD	93	99	98

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(77%-123%)
TOL	= Toluene-d8	(80%-120%)
BFB	= Bromofluorobenzene	(80%-120%)

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

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501645**
Lab Sample ID **1203377541**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/19/2015 10:19**
Dilution: 1
Batch ID: **1501645**

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	87.4	87	78-120
75-05-8	LCS	Acetonitrile	1250	0.0	1120	90	60-124
67-64-1	LCS	Acetone	250	0.0	230	92	55-147
74-88-4	LCS	Iodomethane	250	0.0	222	89	72-126
75-15-0	LCS	Carbon disulfide	250	0.0	230	92	73-135
108-05-4	LCS	Vinyl acetate	250	0.0	260	104	61-133
78-93-3	LCS	2-Butanone	250	0.0	232	93	57-145
108-10-1	LCS	4-Methyl-2-pentanone	250	0.0	218	87	67-128
591-78-6	LCS	2-Hexanone	250	0.0	216	87	59-147
75-71-8	LCS	Dichlorodifluoromethane	50.0	0.0	52.6	105	52-134
74-87-3	LCS	Chloromethane	50.0	0.0	54.4	109	57-126
75-01-4	LCS	Vinyl chloride	50.0	0.0	55.4	111	62-126
74-83-9	LCS	Bromomethane	50.0	0.0	53.8	108	63-127
75-00-3	LCS	Chloroethane	50.0	0.0	56.2	112	69-120
75-69-4	LCS	Trichlorofluoromethane	50.0	0.0	54.4	109	69-129
60-29-7	LCS	Ethyl ether	50.0	0.0	60.3	121 *	72-120
75-35-4	LCS	1,1-Dichloroethylene	50.0	0.0	43.7	87	70-127
75-09-2	LCS	Methylene chloride	50.0	0.0	45.5	91	70-120
1634-04-4	LCS	tert-Butyl methyl ether	50.0	0.0	49.3	99	74-120
156-60-5	LCS	trans-1,2-Dichloroethylene	50.0	0.0	44.2	88	73-120
75-34-3	LCS	1,1-Dichloroethane	50.0	0.0	45.4	91	75-120
156-59-2	LCS	cis-1,2-Dichloroethylene	50.0	0.0	46.4	93	76-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501645**
Lab Sample ID **1203377541**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/19/2015 10:19**
Dilution: 1
Batch ID: **1501645**

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	48.3	97	76-131
74-97-5	LCS	Bromochloromethane	50.0	0.0	46.4	93	76-122
67-66-3	LCS	Chloroform	50.0	0.0	44.7	89	76-120
71-55-6	LCS	1,1,1-Trichloroethane	50.0	0.0	45.9	92	76-131
563-58-6	LCS	1,1-Dichloropropene	50.0	0.0	42.8	86	73-123
56-23-5	LCS	Carbon tetrachloride	50.0	0.0	43.4	87	76-135
107-06-2	LCS	1,2-Dichloroethane	50.0	0.0	42.1	84	71-120
71-43-2	LCS	Benzene	50.0	0.0	42.7	85	75-120
79-01-6	LCS	Trichloroethylene	50.0	0.0	44.3	89	77-123
78-87-5	LCS	1,2-Dichloropropane	50.0	0.0	44.4	89	76-120
74-95-3	LCS	Dibromomethane	50.0	0.0	44.3	89	77-120
75-27-4	LCS	Bromodichloromethane	50.0	0.0	45.1	90	78-126
10061-01-5	LCS	cis-1,3-Dichloropropylene	50.0	0.0	47.9	96	78-125
108-88-3	LCS	Toluene	50.0	0.0	42.2	84	75-120
10061-02-6	LCS	trans-1,3-Dichloropropylene	50.0	0.0	48.0	96	78-124
79-00-5	LCS	1,1,2-Trichloroethane	50.0	0.0	42.9	86	76-120
142-28-9	LCS	1,3-Dichloropropane	50.0	0.0	41.8	84	73-120
127-18-4	LCS	Tetrachloroethylene	50.0	0.0	42.1	84	73-125
124-48-1	LCS	Dibromochloromethane	50.0	0.0	45.6	91	72-131
108-90-7	LCS	Chlorobenzene	50.0	0.0	42.9	86	77-120
100-41-4	LCS	Ethylbenzene	50.0	0.0	44.3	89	77-120
95-47-6	LCS	o-Xylene	50.0	0.0	43.9	88	78-120

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501645**
Lab Sample ID **1203377541**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/19/2015 10:19**
Dilution: 1
Batch ID: **1501645**

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	43.9	88	79-124
75-25-2	LCS	Bromoform	50.0	0.0	47.2	94	65-132
98-82-8	LCS	Isopropylbenzene	50.0	0.0	45.6	91	76-123
79-34-5	LCS	1,1,2,2-Tetrachloroethane	50.0	0.0	45.8	92	72-122
96-18-4	LCS	1,2,3-Trichloropropane	50.0	0.0	46.1	92	71-120
108-86-1	LCS	Bromobenzene	50.0	0.0	44.8	90	76-120
103-65-1	LCS	n-Propylbenzene	50.0	0.0	44.9	90	75-121
108-67-8	LCS	1,3,5-Trimethylbenzene	50.0	0.0	46.2	92	77-122
95-49-8	LCS	2-Chlorotoluene	50.0	0.0	46.1	92	76-120
106-43-4	LCS	4-Chlorotoluene	50.0	0.0	45.5	91	76-120
98-06-6	LCS	tert-Butylbenzene	50.0	0.0	48.0	96	77-127
95-63-6	LCS	1,2,4-Trimethylbenzene	50.0	0.0	46.1	92	77-121
135-98-8	LCS	sec-Butylbenzene	50.0	0.0	47.2	94	77-124
99-87-6	LCS	4-Isopropyltoluene	50.0	0.0	47.0	94	77-126
541-73-1	LCS	1,3-Dichlorobenzene	50.0	0.0	44.1	88	76-120
106-46-7	LCS	1,4-Dichlorobenzene	50.0	0.0	43.5	87	76-120
104-51-8	LCS	n-Butylbenzene	50.0	0.0	47.0	94	76-127
87-68-3	LCS	Hexachlorobutadiene	50.0	0.0	48.0	96	69-133
91-20-3	LCS	Naphthalene	50.0	0.0	51.7	103	67-129
87-61-6	LCS	1,2,3-Trichlorobenzene	50.0	0.0	48.0	96	66-131
120-82-1	LCS	1,2,4-Trichlorobenzene	50.0	0.0	49.0	98	68-132
630-20-6	LCS	1,1,1,2-Tetrachloroethane	50.0	0.0	44.9	90	80-126

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501645**
Lab Sample ID **1203377541**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/19/2015 10:19**
Dilution: 1
Batch ID: **1501645**

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	45.3	91	77-120
71-36-3	LCS	n-Butyl alcohol	5000	0.0	5090	102	61-135

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501645**
Lab Sample ID **1203377542**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/19/2015 11:21**
Dilution: 1
Batch ID: **1501645**

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	271	108	61-132
76-13-1	LCS	Trichlorotrifluoroethane	250	0.0	269	107	67-139
107-05-1	LCS	Allyl chloride	250	0.0	287	115	64-124
107-13-1	LCS	Acrylonitrile	250	0.0	263	105	68-123
107-12-0	LCS	Propionitrile	250	0.0	268	107	69-128
126-98-7	LCS	Methacrylonitrile	250	0.0	250	100	66-124
80-62-6	LCS	Methyl methacrylate	250	0.0	263	105	73-123
97-63-2	LCS	Ethyl methacrylate	250	0.0	244	97	75-122
78-83-1	LCS	Isobutyl alcohol	2500	0.0	2590	103	64-132
126-99-8	LCS	2-Chloro-1,3-butadiene	50.0	0.0	55.6	111	60-137

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PS**
Lab Sample ID **1203377543**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **08/19/2015 17:33**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS	m,p-Xylenes	100	0.00	U	83.3	83	69-122
75-05-8	PS	Acetonitrile	1250	0.00	U	1000	80	54-130
67-64-1	PS	Acetone	250	0.00	U	104	41	27-155
74-88-4	PS	Iodomethane	250	0.00	U	205	82	69-128
75-15-0	PS	Carbon disulfide	250	0.00	U	211	84	68-138
108-05-4	PS	Vinyl acetate	250	0.00	U	239	96	50-137
78-93-3	PS	2-Butanone	250	0.00	U	138	55	30-145
108-10-1	PS	4-Methyl-2-pentanone	250	0.00	U	203	81	60-132
591-78-6	PS	2-Hexanone	250	0.00	U	148	59	38-144
75-71-8	PS	Dichlorodifluoromethane	50.0	0.00	U	47.0	94	37-143
74-87-3	PS	Chloromethane	50.0	0.00	U	47.1	94	48-132
75-01-4	PS	Vinyl chloride	50.0	0.00	U	48.2	96	53-132
74-83-9	PS	Bromomethane	50.0	0.00	U	50.6	101	60-132
75-00-3	PS	Chloroethane	50.0	0.00	U	50.4	101	66-120
75-69-4	PS	Trichlorofluoromethane	50.0	0.00	U	52.2	104	64-131
60-29-7	PS	Ethyl ether	50.0	0.00	U	54.8	110	69-119
75-35-4	PS	1,1-Dichloroethylene	50.0	0.00	U	40.9	82	65-129
75-09-2	PS	Methylene chloride	50.0	0.00	U	41.3	83	68-119
1634-04-4	PS	tert-Butyl methyl ether	50.0	0.00	U	41.3	83	70-123
156-60-5	PS	trans-1,2-Dichloroethylene	50.0	0.00	U	42.5	85	68-123
75-34-3	PS	1,1-Dichloroethane	50.0	0.00	U	42.8	86	71-122
156-59-2	PS	cis-1,2-Dichloroethylene	50.0	0.00	U	41.7	83	72-122

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PS**
Lab Sample ID **1203377543**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **08/19/2015 17:33**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS	2,2-Dichloropropane	50.0	0.00	U	41.1	82	69-131
74-97-5	PS	Bromochloromethane	50.0	0.00	U	41.9	84	74-123
67-66-3	PS	Chloroform	50.0	0.00	U	43.1	86	72-123
71-55-6	PS	1,1,1-Trichloroethane	50.0	0.00	U	42.7	85	71-133
563-58-6	PS	1,1-Dichloropropene	50.0	0.00	U	43.0	86	68-125
56-23-5	PS	Carbon tetrachloride	50.0	0.00	U	43.1	86	70-139
107-06-2	PS	1,2-Dichloroethane	50.0	0.00	U	43.9	88	67-123
71-43-2	PS	Benzene	50.0	0.00	U	41.0	82	71-118
79-01-6	PS	Trichloroethylene	50.0	0.00	U	42.0	84	68-130
78-87-5	PS	1,2-Dichloropropane	50.0	0.00	U	42.3	85	72-118
74-95-3	PS	Dibromomethane	50.0	0.00	U	42.3	85	74-122
75-27-4	PS	Bromodichloromethane	50.0	0.00	U	44.8	90	75-129
10061-01-5	PS	cis-1,3-Dichloropropylene	50.0	0.00	U	44.2	88	73-125
108-88-3	PS	Toluene	50.0	0.00	U	40.6	81	69-119
10061-02-6	PS	trans-1,3-Dichloropropylene	50.0	0.00	U	46.7	93	73-125
79-00-5	PS	1,1,2-Trichloroethane	50.0	0.00	U	41.9	84	73-118
142-28-9	PS	1,3-Dichloropropane	50.0	0.00	U	42.2	84	71-116
127-18-4	PS	Tetrachloroethylene	50.0	0.00	U	39.7	79	65-128
124-48-1	PS	Dibromochloromethane	50.0	0.00	U	45.5	91	68-133
108-90-7	PS	Chlorobenzene	50.0	0.00	U	41.3	83	71-119
100-41-4	PS	Ethylbenzene	50.0	0.00	U	42.1	84	70-121
95-47-6	PS	o-Xylene	50.0	0.00	U	42.4	85	70-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PS**
Lab Sample ID **1203377543**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **08/19/2015 17:33**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
100-42-5	PS	Styrene	50.0	0.00	U	42.6	85	72-127
75-25-2	PS	Bromoform	50.0	0.00	U	45.1	90	60-133
98-82-8	PS	Isopropylbenzene	50.0	0.00	U	43.4	87	67-127
79-34-5	PS	1,1,2,2-Tetrachloroethane	50.0	0.00	U	43.0	86	67-125
96-18-4	PS	1,2,3-Trichloropropane	50.0	0.00	U	41.1	82	68-123
108-86-1	PS	Bromobenzene	50.0	0.00	U	39.6	79	69-120
103-65-1	PS	n-Propylbenzene	50.0	0.00	U	41.7	83	65-125
108-67-8	PS	1,3,5-Trimethylbenzene	50.0	0.00	U	42.1	84	67-126
95-49-8	PS	2-Chlorotoluene	50.0	0.00	U	41.5	83	67-122
106-43-4	PS	4-Chlorotoluene	50.0	0.00	U	41.8	84	66-121
98-06-6	PS	tert-Butylbenzene	50.0	0.00	U	42.7	85	67-130
95-63-6	PS	1,2,4-Trimethylbenzene	50.0	0.00	U	42.8	86	66-124
135-98-8	PS	sec-Butylbenzene	50.0	0.00	U	42.0	84	67-128
99-87-6	PS	4-Isopropyltoluene	50.0	0.00	U	42.4	85	66-129
541-73-1	PS	1,3-Dichlorobenzene	50.0	0.00	U	39.6	79	67-120
106-46-7	PS	1,4-Dichlorobenzene	50.0	0.00	U	40.3	81	66-118
104-51-8	PS	n-Butylbenzene	50.0	0.00	U	41.7	83	63-131
87-68-3	PS	Hexachlorobutadiene	50.0	0.00	U	38.6	77	55-138
91-20-3	PS	Naphthalene	50.0	0.00	U	44.1	88	61-131
87-61-6	PS	1,2,3-Trichlorobenzene	50.0	0.00	U	41.0	82	56-133
120-82-1	PS	1,2,4-Trichlorobenzene	50.0	0.00	U	39.3	79	56-131
630-20-6	PS	1,1,1,2-Tetrachloroethane	50.0	0.00	U	44.7	89	76-129

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PS**
Lab Sample ID **1203377543**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **08/19/2015 17:33**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
95-50-1	PS	1,2-Dichlorobenzene	50.0	0.00	U	39.7	79	69-119
71-36-3	PS	n-Butyl alcohol	5000	0.00	U	4590	92	55-141

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203377545**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/19/2015 18:04**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD	m,p-Xylenes	100	0.00	U	84.9	85	69-122	2	0-20
75-05-8	PSD	Acetonitrile	1250	0.00	U	1060	85	54-130	5	0-20
67-64-1	PSD	Acetone	250	0.00	U	107	43	27-155	3	0-20
74-88-4	PSD	Iodomethane	250	0.00	U	215	86	69-128	5	0-20
75-15-0	PSD	Carbon disulfide	250	0.00	U	221	88	68-138	4	0-20
108-05-4	PSD	Vinyl acetate	250	0.00	U	233	93	50-137	3	0-20
78-93-3	PSD	2-Butanone	250	0.00	U	145	58	30-145	4	0-20
108-10-1	PSD	4-Methyl-2-pentanone	250	0.00	U	218	87	60-132	7	0-20
591-78-6	PSD	2-Hexanone	250	0.00	U	158	63	38-144	7	0-20
75-71-8	PSD	Dichlorodifluoromethane	50.0	0.00	U	47.7	95	37-143	1	0-20
74-87-3	PSD	Chloromethane	50.0	0.00	U	49.7	99	48-132	5	0-20
75-01-4	PSD	Vinyl chloride	50.0	0.00	U	49.6	99	53-132	3	0-20
74-83-9	PSD	Bromomethane	50.0	0.00	U	53.2	106	60-132	5	0-20
75-00-3	PSD	Chloroethane	50.0	0.00	U	53.5	107	66-120	6	0-20
75-69-4	PSD	Trichlorofluoromethane	50.0	0.00	U	53.3	107	64-131	2	0-20
60-29-7	PSD	Ethyl ether	50.0	0.00	U	55.9	112	69-119	2	0-20
75-35-4	PSD	1,1-Dichloroethylene	50.0	0.00	U	43.0	86	65-129	5	0-20
75-09-2	PSD	Methylene chloride	50.0	0.00	U	42.0	84	68-119	2	0-20
1634-04-4	PSD	tert-Butyl methyl ether	50.0	0.00	U	43.6	87	70-123	5	0-20
156-60-5	PSD	trans-1,2-Dichloroethylene	50.0	0.00	U	42.8	86	68-123	1	0-20
75-34-3	PSD	1,1-Dichloroethane	50.0	0.00	U	43.8	88	71-122	2	0-20
156-59-2	PSD	cis-1,2-Dichloroethylene	50.0	0.00	U	43.8	88	72-122	5	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203377545**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/19/2015 18:04**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD	2,2-Dichloropropane	50.0	0.00	U	43.7	87	69-131	6	0-20
74-97-5	PSD	Bromochloromethane	50.0	0.00	U	43.5	87	74-123	4	0-20
67-66-3	PSD	Chloroform	50.0	0.00	U	44.1	88	72-123	2	0-20
71-55-6	PSD	1,1,1-Trichloroethane	50.0	0.00	U	45.7	91	71-133	7	0-20
563-58-6	PSD	1,1-Dichloropropene	50.0	0.00	U	43.6	87	68-125	1	0-20
56-23-5	PSD	Carbon tetrachloride	50.0	0.00	U	44.9	90	70-139	4	0-20
107-06-2	PSD	1,2-Dichloroethane	50.0	0.00	U	43.5	87	67-123	1	0-20
71-43-2	PSD	Benzene	50.0	0.00	U	41.3	83	71-118	1	0-20
79-01-6	PSD	Trichloroethylene	50.0	0.00	U	41.2	82	68-130	2	0-20
78-87-5	PSD	1,2-Dichloropropane	50.0	0.00	U	42.3	85	72-118	0	0-20
74-95-3	PSD	Dibromomethane	50.0	0.00	U	43.3	87	74-122	2	0-20
75-27-4	PSD	Bromodichloromethane	50.0	0.00	U	45.3	91	75-129	1	0-20
10061-01-5	PSD	cis-1,3-Dichloropropylene	50.0	0.00	U	44.1	88	73-125	0	0-20
108-88-3	PSD	Toluene	50.0	0.00	U	42.6	85	69-119	5	0-20
10061-02-6	PSD	trans-1,3-Dichloropropylene	50.0	0.00	U	49.2	98	73-125	5	0-20
79-00-5	PSD	1,1,2-Trichloroethane	50.0	0.00	U	44.6	89	73-118	6	0-20
142-28-9	PSD	1,3-Dichloropropane	50.0	0.00	U	44.4	89	71-116	5	0-20
127-18-4	PSD	Tetrachloroethylene	50.0	0.00	U	42.6	85	65-128	7	0-20
124-48-1	PSD	Dibromochloromethane	50.0	0.00	U	48.1	96	68-133	5	0-20
108-90-7	PSD	Chlorobenzene	50.0	0.00	U	41.7	83	71-119	1	0-20
100-41-4	PSD	Ethylbenzene	50.0	0.00	U	43.2	86	70-121	3	0-20
95-47-6	PSD	o-Xylene	50.0	0.00	U	44.6	89	70-123	5	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203377545**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/19/2015 18:04**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
100-42-5	PSD	Styrene	50.0	0.00	U	44.7	89	72-127	5	0-20
75-25-2	PSD	Bromoform	50.0	0.00	U	46.8	94	60-133	4	0-20
98-82-8	PSD	Isopropylbenzene	50.0	0.00	U	44.5	89	67-127	3	0-20
79-34-5	PSD	1,1,2,2-Tetrachloroethane	50.0	0.00	U	43.4	87	67-125	1	0-20
96-18-4	PSD	1,2,3-Trichloropropane	50.0	0.00	U	44.3	89	68-123	7	0-20
108-86-1	PSD	Bromobenzene	50.0	0.00	U	41.3	83	69-120	4	0-20
103-65-1	PSD	n-Propylbenzene	50.0	0.00	U	41.1	82	65-125	2	0-20
108-67-8	PSD	1,3,5-Trimethylbenzene	50.0	0.00	U	42.1	84	67-126	0	0-20
95-49-8	PSD	2-Chlorotoluene	50.0	0.00	U	42.4	85	67-122	2	0-20
106-43-4	PSD	4-Chlorotoluene	50.0	0.00	U	41.4	83	66-121	1	0-20
98-06-6	PSD	tert-Butylbenzene	50.0	0.00	U	42.7	85	67-130	0	0-20
95-63-6	PSD	1,2,4-Trimethylbenzene	50.0	0.00	U	41.5	83	66-124	3	0-20
135-98-8	PSD	sec-Butylbenzene	50.0	0.00	U	41.5	83	67-128	1	0-20
99-87-6	PSD	4-Isopropyltoluene	50.0	0.00	U	43.1	86	66-129	2	0-20
541-73-1	PSD	1,3-Dichlorobenzene	50.0	0.00	U	40.1	80	67-120	1	0-20
106-46-7	PSD	1,4-Dichlorobenzene	50.0	0.00	U	39.8	80	66-118	1	0-20
104-51-8	PSD	n-Butylbenzene	50.0	0.00	U	40.3	81	63-131	3	0-20
87-68-3	PSD	Hexachlorobutadiene	50.0	0.00	U	38.0	76	55-138	1	0-20
91-20-3	PSD	Naphthalene	50.0	0.00	U	46.0	92	61-131	4	0-20
87-61-6	PSD	1,2,3-Trichlorobenzene	50.0	0.00	U	41.2	82	56-133	1	0-20
120-82-1	PSD	1,2,4-Trichlorobenzene	50.0	0.00	U	40.1	80	56-131	2	0-20
630-20-6	PSD	1,1,1,2-Tetrachloroethane	50.0	0.00	U	46.1	92	76-129	3	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203377545**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/19/2015 18:04**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-50-1	PSD	1,2-Dichlorobenzene	50.0	0.00	U	40.7	81	69-119	2	0-20
71-36-3	PSD	n-Butyl alcohol	5000	0.00	U	4890	98	55-141	6	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PS**
Lab Sample ID **1203377544**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike**
Matrix: **W**
Analysis Date: **08/19/2015 18:35**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS	Acrolein	250	0.00	U	222	89	48-138
76-13-1	PS	Trichlorotrifluoroethane	250	0.00	U	218	87	63-146
107-05-1	PS	Allyl chloride	250	0.00	U	250	100	61-126
107-13-1	PS	Acrylonitrile	250	0.00	U	244	98	62-128
107-12-0	PS	Propionitrile	250	0.00	U	255	102	63-133
126-98-7	PS	Methacrylonitrile	250	0.00	U	245	98	61-131
80-62-6	PS	Methyl methacrylate	250	0.00	U	247	99	69-127
97-63-2	PS	Ethyl methacrylate	250	0.00	U	241	96	70-126
78-83-1	PS	Isobutyl alcohol	2500	0.00	U	2430	97	57-139
126-99-8	PS	2-Chloro-1,3-butadiene	50.0	0.00	U	48.1	96	56-140

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203377546**
Instrument: **VOA1.I**
Analyst: **VXY1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/19/2015 19:06**
Dilution: 1
Batch ID: **1501645**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD	Acrolein	250	0.00	U	227	91	48-138	2	0-20
76-13-1	PSD	Trichlorotrifluoroethane	250	0.00	U	257	103	63-146	17	0-20
107-05-1	PSD	Allyl chloride	250	0.00	U	258	103	61-126	3	0-20
107-13-1	PSD	Acrylonitrile	250	0.00	U	244	98	62-128	0	0-20
107-12-0	PSD	Propionitrile	250	0.00	U	247	99	63-133	3	0-20
126-98-7	PSD	Methacrylonitrile	250	0.00	U	241	97	61-131	1	0-20
80-62-6	PSD	Methyl methacrylate	250	0.00	U	245	98	69-127	1	0-20
97-63-2	PSD	Ethyl methacrylate	250	0.00	U	245	98	70-126	2	0-20
78-83-1	PSD	Isobutyl alcohol	2500	0.00	U	2440	98	57-139	0	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	50.0	0.00	U	51.7	103	56-140	7	0-20

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502242**
Lab Sample ID **1203379079**
Instrument: **VOA5.I**
Analyst: **CDS1**
Purge Vol: **5 mL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/24/2015 09:43**
Dilution: 1
Batch ID: **1502242**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS	Acrolein	25.0	0.0	26.6	106	61-132
107-13-1	LCS	Acrylonitrile	25.0	0.0	25.3	101	68-123
126-99-8	LCS	2-Chloro-1,3-butadiene	5.00	0.0	5.27	105	60-137

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Sample Type: **Post Spike**
Client ID: **CAMO-15-102569PS**
Matrix: **W**
Lab Sample ID **1203379080**
Instrument: **VOA5.I**
Analysis Date: **08/24/2015 18:16**
Dilution: 1
Analyst: **CDS1**
Purge Vol: **5 mL**
Batch ID: **1502242**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS	Acrolein	25.0	0.00	U	22.0	88	48-138
107-13-1	PS	Acrylonitrile	25.0	0.00	U	21.8	87	62-128
126-99-8	PS	2-Chloro-1,3-butadiene	5.00	0.00	U	4.95	99	56-140

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102569PSD**
Lab Sample ID **1203379081**
Instrument: **VOA5.I**
Analyst: **CDS1**
Purge Vol: **5 mL**

Sample Type: **Post Spike Duplicate**
Matrix: **W**
Analysis Date: **08/24/2015 18:44**
Dilution: 1
Batch ID: **1502242**

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	25.0	0.00	U	25.4	101	48-138	14	0-20
107-13-1	PSD	Acrylonitrile	25.0	0.00	U	25.1	100	62-128	14	0-20
126-99-8	PSD	2-Chloro-1,3-butadiene	5.00	0.00	U	5.35	107	56-140	8	0-20

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1501645**	**Instrument ID:**	**VOA1.I**	**Data File:**	**081915V1\1W306BA.D**
Lab Sample ID:	**1203377540**	**Prep Date:**	**08/19/2015 11:52**	**Analyzed:**	**08/19/15 11:52**
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 1501645	1203377541	081915V1\1W303LA.D	08/19/15	1019
02	LCS for batch 1501645	1203377542	081915V1\1W305LA.D	08/19/15	1121
03	CAMO-15-102566	379487009	081915V1\1W311.D	08/19/15	1356
04	CAMO-15-102578	379487004	081915V1\1W313.D	08/19/15	1459
05	CAMO-15-102569PS	1203377543	081915V1\1W318.D	08/19/15	1733
06	CAMO-15-102569PSD	1203377545	081915V1\1W319.D	08/19/15	1804
07	CAMO-15-102569PS	1203377544	081915V1\1W320.D	08/19/15	1835
08	CAMO-15-102569PSD	1203377546	081915V1\1W321.D	08/19/15	1906

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1502242**	**Instrument ID:**	**VOA5.I**	**Data File:**	**082415V5\5X104.D**
Lab Sample ID:	**1203379078**	**Prep Date:**	**08/24/2015 10:11**	**Analyzed:**	**08/24/15 10:11**
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 1502242	1203379079	082415V5\5X103.D	08/24/15	0943
02	CAMO-15-102578	379487004	082415V5\5X112.D	08/24/15	1404
03	CAMO-15-102566	379487009	082415V5\5X119.D	08/24/15	1719
04	CAMO-15-102569PS	1203379080	082415V5\5X121.D	08/24/15	1816
05	CAMO-15-102569PSD	1203379081	082415V5\5X122.D	08/24/15	1844

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377540**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:52**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:52**				
Data File:	**081915V1\1W306BA.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	1.50	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	1.50	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	1.50	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:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377540**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:52**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:52**				
Data File:	**081915V1\1W306BA.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	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	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	2.00	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:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377540**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:52**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:52**				
Data File:	**081915V1\1W306BA.D**	**Column:**	**DB-624**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.4	50.0	ug/L	98.8	(77%-123%)
Bromofluorobenzene	50.8	50.0	ug/L	102	(80%-120%)
Toluene-d8	51.3	50.0	ug/L	103	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377541**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 10:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 10:19**				
Data File:	**081915V1\1W303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		44.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		45.9	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		45.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		45.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.7	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		42.8	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		48.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		46.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		49.0	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		45.3	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		42.1	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		44.4	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		41.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		43.5	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		48.3	ug/L	0.300	1.00
78-93-3	2-Butanone		232	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		46.1	ug/L	0.300	1.00
591-78-6	2-Hexanone		216	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		45.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		47.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		218	ug/L	1.50	5.00
67-64-1	Acetone		230	ug/L	1.50	10.0
75-05-8	Acetonitrile		1120	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		42.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		44.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		45.1	ug/L	0.300	1.00
75-25-2	Bromoform		47.2	ug/L	0.300	1.00
74-83-9	Bromomethane		53.8	ug/L	0.300	1.00
75-15-0	Carbon disulfide		230	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377541**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 10:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 10:19**				
Data File:	**081915V1\1W303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		43.4	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.9	ug/L	0.300	1.00
75-00-3	Chloroethane		56.2	ug/L	0.300	1.00
67-66-3	Chloroform		44.7	ug/L	0.300	1.00
74-87-3	Chloromethane		54.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		44.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		52.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		60.3	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		44.3	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.0	ug/L	0.300	1.00
74-88-4	Iodomethane		222	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		45.6	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		45.5	ug/L	1.00	10.0
91-20-3	Naphthalene		51.7	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		43.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		42.1	ug/L	0.300	1.00
108-88-3	Toluene		42.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		44.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		54.4	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		260	ug/L	1.50	5.00
75-01-4	Vinyl chloride		55.4	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		46.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		47.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		87.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5090	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		47.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.9	ug/L	0.300	1.00
95-47-6	o-Xylene		43.9	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		47.2	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		49.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		48.0	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377541**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 10:19**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 10:19**				
Data File:	**081915V1\1W303LA.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		44.2	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	50.3	50.0	ug/L	101	(77%-123%)
Bromofluorobenzene	50.4	50.0	ug/L	101	(80%-120%)
Toluene-d8	47.8	50.0	ug/L	95.5	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377542**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:21**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:21**				
Data File:	**081915V1\1W305LA.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	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		55.6	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	1.50	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	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		271	ug/L	1.50	5.00
107-13-1	Acrylonitrile		263	ug/L	1.50	5.00
107-05-1	Allyl chloride		287	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:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377542**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:21**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:21**				
Data File:	**081915V1\1W305LA.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		244	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		2590	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		250	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		263	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		268	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		269	ug/L	2.00	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:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203377542**				
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501645**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 11:21**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 11:21**				
Data File:	**081915V1\1W305LA.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	48.2	50.0	ug/L	96.4	(77%-123%)
Bromofluorobenzene	50.0	50.0	ug/L	100	(80%-120%)
Toluene-d8	49.5	50.0	ug/L	99	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377543**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 17:33**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 17:33**				
Data File:	**081915V1\1W318.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		44.7	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		42.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.0	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		41.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		42.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		40.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		43.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		41.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		41.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		39.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		42.8	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		39.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		43.9	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.2	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		40.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		41.1	ug/L	0.300	1.00
78-93-3	2-Butanone		138	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		41.5	ug/L	0.300	1.00
591-78-6	2-Hexanone		148	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		41.8	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		42.4	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		203	ug/L	1.50	5.00
67-64-1	Acetone		104	ug/L	3.00	10.0
75-05-8	Acetonitrile		1000	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		41.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		39.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		41.9	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		44.8	ug/L	0.300	1.00
75-25-2	Bromoform		45.1	ug/L	0.300	1.00
74-83-9	Bromomethane		50.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		211	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377543**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 17:33**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 17:33**				
Data File:	**081915V1\1W318.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		43.1	ug/L	0.300	1.00
108-90-7	Chlorobenzene		41.3	ug/L	0.300	1.00
75-00-3	Chloroethane		50.4	ug/L	0.300	1.00
67-66-3	Chloroform		43.1	ug/L	0.300	1.00
74-87-3	Chloromethane		47.1	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		45.5	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		47.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		54.8	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.1	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		38.6	ug/L	0.300	1.00
74-88-4	Iodomethane		205	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		43.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		41.3	ug/L	3.00	10.0
91-20-3	Naphthalene		44.1	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		42.6	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		39.7	ug/L	0.300	1.00
108-88-3	Toluene		40.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		42.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		52.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		239	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		41.7	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		44.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		83.3	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4590	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		41.7	ug/L	0.300	1.00
95-47-6	o-Xylene		42.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		42.0	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		41.3	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377543**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 17:33**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 17:33**				
Data File:	**081915V1\1W318.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
156-60-5	trans-1,2-Dichloroethylene		42.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		46.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.3	50.0	ug/L	96.6	(77%-123%)
Bromofluorobenzene	49.8	50.0	ug/L	99.5	(80%-120%)
Toluene-d8	47.9	50.0	ug/L	95.8	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377544**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:35**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:35**				
Data File:	**081915V1\1W320.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		48.1	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		222	ug/L	1.50	5.00
107-13-1	Acrylonitrile		244	ug/L	1.00	5.00
107-05-1	Allyl chloride		250	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:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377544**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:35**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:35**				
Data File:	**081915V1\1W320.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		241	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2430	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		245	ug/L	1.00	5.00
80-62-6	Methyl methacrylate		247	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		255	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		218	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:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377544**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:35**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:35**				
Data File:	**081915V1\1W320.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	46.8	50.0	ug/L	93.6	(77%-123%)
Bromofluorobenzene	51.7	50.0	ug/L	103	(80%-120%)
Toluene-d8	47.7	50.0	ug/L	95.3	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377545**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:04**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:04**				
Data File:	**081915V1\1W319.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		46.1	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		45.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		44.6	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.0	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		43.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		41.2	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		44.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		40.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		41.5	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		43.5	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		40.1	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		44.4	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		39.8	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		43.7	ug/L	0.300	1.00
78-93-3	2-Butanone		145	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene		42.4	ug/L	0.300	1.00
591-78-6	2-Hexanone		158	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene		41.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		43.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		218	ug/L	1.50	5.00
67-64-1	Acetone		107	ug/L	3.00	10.0
75-05-8	Acetonitrile		1060	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.00	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		41.3	ug/L	0.300	1.00
108-86-1	Bromobenzene		41.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		43.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		45.3	ug/L	0.300	1.00
75-25-2	Bromoform		46.8	ug/L	0.300	1.00
74-83-9	Bromomethane		53.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		221	ug/L	1.50	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377545**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:04**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:04**				
Data File:	**081915V1\1W319.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
56-23-5	Carbon tetrachloride		44.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		41.7	ug/L	0.300	1.00
75-00-3	Chloroethane		53.5	ug/L	0.300	1.00
67-66-3	Chloroform		44.1	ug/L	0.300	1.00
74-87-3	Chloromethane		49.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		48.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		43.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		47.7	ug/L	0.300	1.00
60-29-7	Ethyl ether		55.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		43.2	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		38.0	ug/L	0.300	1.00
74-88-4	Iodomethane		215	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		44.5	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.00	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		42.0	ug/L	3.00	10.0
91-20-3	Naphthalene		46.0	ug/L	0.400	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		44.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		42.6	ug/L	0.300	1.00
108-88-3	Toluene		42.6	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		53.3	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	1.50	5.00
108-05-4	Vinyl acetate		233	ug/L	1.50	5.00
75-01-4	Vinyl chloride		49.6	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		44.1	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		84.9	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4890	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		40.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		41.1	ug/L	0.300	1.00
95-47-6	o-Xylene		44.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		41.5	ug/L	0.300	1.00
1634-04-4	tert-Butyl methyl ether		43.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.7	ug/L	0.300	1.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377545**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 18:04**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 18:04**				
Data File:	**081915V1\1W319.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		49.2	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.3	50.0	ug/L	96.7	(77%-123%)
Bromofluorobenzene	49.8	50.0	ug/L	99.6	(80%-120%)
Toluene-d8	50.0	50.0	ug/L	100	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377546**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 19:06**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 19:06**				
Data File:	**081915V1\1W321.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	2.00	5.00
126-99-8	2-Chloro-1,3-butadiene		51.7	ug/L	0.200	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	2.20	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		227	ug/L	1.50	5.00
107-13-1	Acrylonitrile		244	ug/L	1.00	5.00
107-05-1	Allyl chloride		258	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:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377546**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 19:06**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 19:06**				
Data File:	**081915V1\1W321.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		245	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		2440	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	1.00	5.00
80-62-6	Methyl methacrylate		245	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.400	1.00
107-12-0	Propionitrile		247	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		257	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:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203377546**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1501645**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B DOE-AL**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1501645**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**08/19/2015 19:06**	**Analyst:**	**VXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/19/2015 19:06**				
Data File:	**081915V1\1W321.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	46.6	50.0	ug/L	93.1	(77%-123%)
Bromofluorobenzene	48.8	50.0	ug/L	97.7	(80%-120%)
Toluene-d8	49.6	50.0	ug/L	99.1	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203379078**				
Client Sample:	**QC for batch 1502242**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502242**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 10:11**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 10:11**				
Data File:	**082415V5\5X104.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene	U	0.400	ug/L	0.100	0.400
107-02-8	Acrolein	U	2.00	ug/L	0.500	2.00
107-13-1	Acrylonitrile	U	2.00	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.3	50.0	ug/L	103	(77%-123%)
Bromofluorobenzene	49.4	50.0	ug/L	98.8	(80%-120%)
Toluene-d8	49.5	50.0	ug/L	99	(80%-120%)

Tentatively Identified Compound Summary

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

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203379079**				
Client Sample:	**QC for batch 1502242**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502242**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 09:43**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 09:43**				
Data File:	**082415V5\5X103.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene		5.27	ug/L	0.100	0.400
107-02-8	Acrolein		26.6	ug/L	0.500	2.00
107-13-1	Acrylonitrile		25.3	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.1	50.0	ug/L	102	(77%-123%)
Bromofluorobenzene	50.2	50.0	ug/L	100	(80%-120%)
Toluene-d8	49.7	50.0	ug/L	99.4	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203379080**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1502242**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PS**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 18:16**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 18:16**				
Data File:	**082415V5\5X121.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene		4.95	ug/L	0.100	0.400
107-02-8	Acrolein		22.0	ug/L	0.500	2.00
107-13-1	Acrylonitrile		21.8	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.7	50.0	ug/L	105	(77%-123%)
Bromofluorobenzene	51.3	50.0	ug/L	103	(80%-120%)
Toluene-d8	50.2	50.0	ug/L	100	(80%-120%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/12/2015 15:53**	**Matrix:**	**W**
Lab Sample ID:	**1203379081**	**Date Received:**	**08/14/2015 08:40**		
Client Sample:	**QC for batch 1502242**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102569PSD**	**Method:**	**SW846 8260B with SIM**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1502242**	**Inst:**	**VOA5.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 18:44**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**08/24/2015 18:44**				
Data File:	**082415V5\5X122.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-99-8	2-Chloro-1,3-butadiene		5.35	ug/L	0.100	0.400
107-02-8	Acrolein		25.4	ug/L	0.500	2.00
107-13-1	Acrylonitrile		25.1	ug/L	0.500	2.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.9	50.0	ug/L	108	(77%-123%)
Bromofluorobenzene	53.7	50.0	ug/L	107	(80%-120%)
Toluene-d8	52.7	50.0	ug/L	105	(80%-120%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
20-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	SW846 8260B DOE-AL	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1501645	See Below		

Potentially affected work order(s)(SDG): 379221(2015-2141),379330(2015-2152),379487(2015-2166),379590(2015-2186)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed Recovery for LCS/LCSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for LCS/LCSD: QC 1203377541LCS 2. Failed Recovery for MS/MSD, or PS/PSD: QC 1203377543PS, 1203377545PSD	1. The LCS (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported. 1203377541 (LCS) Ethyl ether [121* (72%-120%)]. 2. Preservation by acidification causes 2-Chloroethylvinyl ether to degrade resulting in poor recoveries in samples (See Below). 1203377543 (CAMO-15-102569PS) 2-Chloroethylvinyl ether [0* (60%-119%)]. 1203377545 (CAMO-15-102569PSD) 2-Chloroethylvinyl ether [0* (60%-119%)].

Originator's Name:

Vanny Yib 21-AUG-15

Data Validator/Group Leader:

Erin Haubert 21-AUG-15

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

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:	1502077
Prep Batch Number:	1502076

Sample Analysis

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

Sample ID	Client ID
379487004	CAMO-15-102578
1203378627	Method Blank (MB)
1203378628	Laboratory Control Sample (LCS)
1203378629	379641002(CASA-15-102634) Matrix Spike (MS)
1203378630	379641002(CASA-15-102634) 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# 35.

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 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 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 379641002 (CASA-15-102634) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement
The MS or MSD (See Below) recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low spike recoveries were isolated to the MS or MSD only and were the result of a poor extraction.

Sample	Analyte	Value
1203378629 (CASA-15-102634MS)	Benzidine	7.55* (10%-127%)

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203378629MS and 1203378630MSD (CASA-15-102634)	Several	See applicable report

The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits for Benzidine. Due to the large difference between the individual recoveries in each MS and MSD analyte pair, the failure may be attributed to an error in the extraction process. 1203378629 (CASA-15-102634MS) and 1203378630 (CASA-15-102634MSD).

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
A data exception report (DER) 1441487 was generated for samples in this batch. 1203378629 (CASA-15-102634MS) and 1203378630 (CASA-15-102634MSD).

Manual Integrations
Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations, if any, are included with the raw data.

TIC Comment
Tentatively identified compounds (TIC) were requested for sample 379487004 (CAMO-15-102578) in this SDG in this batch.

Additional Comments
Additional comments were not required for the SDG associated samples in this batch.

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)

Method/Analysis Information

Procedure:	**Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**
Analytical Method:	SW846 3510C/8270D SIM
Prep Method:	SW846 3510C
Analytical Batch Number:	1502080
Prep Batch Number:	1502079

Sample Analysis

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

Sample ID	Client ID
379487004	CAMO-15-102578
1203378631	Method Blank (MB)
1203378632	Laboratory Control Sample (LCS)
1203378633	379487004(CAMO-15-102578) Matrix Spike (MS)
1203378634	379487004(CAMO-15-102578) 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# 35.

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 for samples and the associated QC. However, the method allows for a designated number of outliers dependent on the requested analyte list. This SDG satisfied the 8270D outlier acceptance criteria. If required, a CRDL was analyzed after the CCVs to demonstrate that there is adequate sensitivity to detect the failed compounds at the applicable lower quantitation limit. The %Drift for Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene and Benzo(ghi)perylene were greater than the 20% Maximum Drift allowed in the CCV. Since these analytes were not detected in any of the samples in the batch, the high recoveries do not have any adverse effect on the data. Results are reported.

Quality Control (QC) Information

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

Surrogate Recoveries
Samples (See Below) displayed surrogate recovery failures. Since the parent sample and associated MS/MSD pair displayed similar recoveries, the failures were attributed to matrix interference and the data results are reported.

Sample	Analyte	Value
1203378633 (CAMO-15-102578MS)	5-alpha-Androstane	18* (35%-112%)
1203378634 (CAMO-15-102578MSD)	5-alpha-Androstane	21* (35%-112%)
379487004 (CAMO-15-102578)	5-alpha-Androstane	27* (35%-112%)

Laboratory Control Sample (LCS) Recovery
The LCS and/or LCSD (See Below) did not meet spike recovery acceptance criteria. The failures are known to be poor responding analytes as stated per the Method. This may account for the low recoveries and the data were reported.

Sample	Analyte	Value
1203378632 (LCS)	Benzidine	26* (50%-130%)

QC Sample Designation
Sample 379487004 (CAMO-15-102578) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement
The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported.

Sample	Analyte	Value
1203378633 (CAMO-15-102578MS)	Benzidine	17* (40%-130%)
	Benzo(ghi)perylene	37* (39%-124%)
1203378634 (CAMO-15-102578MSD)	Benzidine	17* (40%-130%)

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.

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
Sample 1203378632 (LCS) was diluted due to the presence of one or more over-range target analytes.

Sample Re-extraction/Re-analysis
Sample 379487004 (CAMO-15-102578) was re-analyzed to confirm the potential of carryover from the previous sample. The re-analysis data results are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
A data exception report (DER) 1443338 was generated for samples in this SDG/batch.

Manual Integrations
Some initial calibration standards, continuing calibration standards, and/or samples may require manual integrations due to software limitations. Manual integrations, if any, are included with the raw data.

TIC Comment
Tentatively identified compounds (TIC) were not required for the samples in this SDG for this batch.

Additional Comments
Additional comments were not required for the SDG associated samples in this batch.

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
MSD2.I	Agilent 7890A/5975C GC/MS w/7683 Autosampler	HP7890A/HP5975C	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 10 SEP 2015 **Title: Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 18:45**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2418.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.100	ug/L	0.030	0.100
91-58-7	2-Chloronaphthalene	U	0.100	ug/L	0.030	0.100
91-57-6	2-Methylnaphthalene	U	0.100	ug/L	0.030	0.100
91-94-1	3,3'-Dichlorobenzidine	U	0.100	ug/L	0.039	0.100
83-32-9	Acenaphthene	U	0.100	ug/L	0.030	0.100
208-96-8	Acenaphthylene	U	0.100	ug/L	0.030	0.100
120-12-7	Anthracene	U	0.100	ug/L	0.030	0.100
92-87-5	Benzidine	U	2.50	ug/L	0.830	2.50
56-55-3	Benzo(a)anthracene	U	0.100	ug/L	0.030	0.100
50-32-8	Benzo(a)pyrene	U	0.100	ug/L	0.030	0.100
205-99-2	Benzo(b)fluoranthene	U	0.100	ug/L	0.030	0.100
191-24-2	Benzo(ghi)perylene	U	0.100	ug/L	0.030	0.100
207-08-9	Benzo(k)fluoranthene	U	0.100	ug/L	0.030	0.100
218-01-9	Chrysene	U	0.100	ug/L	0.030	0.100
53-70-3	Dibenzo(a,h)anthracene	U	0.100	ug/L	0.030	0.100
206-44-0	Fluoranthene	U	0.100	ug/L	0.030	0.100
86-73-7	Fluorene	U	0.100	ug/L	0.030	0.100
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.100	ug/L	0.030	0.100
62-75-9	N-Methyl-N-nitrosomethylamine	U	0.200	ug/L	0.070	0.200
924-16-3	N-Nitrosodi-n-butylamine	U	0.100	ug/L	0.030	0.100
55-18-5	N-Nitrosodiethylamine	U	0.100	ug/L	0.030	0.100
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	0.100	ug/L	0.030	0.100
930-55-2	N-Nitrosopyrrolidine	U	0.100	ug/L	0.030	0.100
91-20-3	Naphthalene	U	0.100	ug/L	0.030	0.100
85-01-8	Phenanthrene	U	0.100	ug/L	0.030	0.100
129-00-0	Pyrene	U	0.100	ug/L	0.030	0.100
111-44-4	bis(2-Chloroethyl) ether	U	0.100	ug/L	0.030	0.100

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
5-alpha-Androstane	5.00	5.00	ug/L	27	*	(35%-112%)

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:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:20**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**980 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2308.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	5.10	ug/L	1.53	5.10
120-82-1	1,2,4-Trichlorobenzene	U	5.10	ug/L	1.53	5.10
95-50-1	1,2-Dichlorobenzene	U	5.10	ug/L	1.53	5.10
122-66-7	Azobenzene	U	5.10	ug/L	1.53	5.10
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	5.10	ug/L	1.53	5.10
106-46-7	1,4-Dichlorobenzene	U	5.10	ug/L	1.53	5.10
123-91-1	1,4-Dioxane	U	5.10	ug/L	1.53	5.10
90-12-0	1-Methylnaphthalene	U	0.510	ug/L	0.153	0.510
58-90-2	2,3,4,6-Tetrachlorophenol	U	5.10	ug/L	1.53	5.10
95-95-4	2,4,5-Trichlorophenol	U	5.10	ug/L	1.53	5.10
88-06-2	2,4,6-Trichlorophenol	U	5.10	ug/L	1.53	5.10
120-83-2	2,4-Dichlorophenol	U	5.10	ug/L	1.53	5.10
105-67-9	2,4-Dimethylphenol	U	5.10	ug/L	1.53	5.10
51-28-5	2,4-Dinitrophenol	U	10.2	ug/L	2.55	10.2
121-14-2	2,4-Dinitrotoluene	U	5.10	ug/L	1.53	5.10
606-20-2	2,6-Dinitrotoluene	U	5.10	ug/L	1.53	5.10
91-58-7	2-Chloronaphthalene	U	0.510	ug/L	0.209	0.510
95-57-8	2-Chlorophenol	U	5.10	ug/L	1.53	5.10
534-52-1	2-Methyl-4,6-dinitrophenol	U	5.10	ug/L	1.53	5.10
91-57-6	2-Methylnaphthalene	U	0.510	ug/L	0.153	0.510
88-75-5	2-Nitrophenol	U	5.10	ug/L	1.53	5.10
91-94-1	3,3'-Dichlorobenzidine	U	5.10	ug/L	1.53	5.10
101-55-3	4-Bromophenylphenylether	U	5.10	ug/L	1.53	5.10
59-50-7	Parachlorometa cresol	U	5.10	ug/L	1.53	5.10
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	5.10	ug/L	1.68	5.10
7005-72-3	4-Chlorophenylphenylether	U	5.10	ug/L	1.53	5.10
100-02-7	4-Nitrophenol	U	5.10	ug/L	1.53	5.10
83-32-9	Acenaphthene	U	0.510	ug/L	0.153	0.510
208-96-8	Acenaphthylene	U	0.510	ug/L	0.153	0.510
62-53-3	Aniline	U	5.10	ug/L	2.14	5.10
120-12-7	Anthracene	U	0.510	ug/L	0.153	0.510
1912-24-9	Atrazine	U	5.10	ug/L	1.53	5.10
92-87-5	Benzidine	U	5.10	ug/L	1.99	5.10
56-55-3	Benzo(a)anthracene	U	0.510	ug/L	0.153	0.510
50-32-8	Benzo(a)pyrene	U	0.510	ug/L	0.153	0.510
205-99-2	Benzo(b)fluoranthene	U	0.510	ug/L	0.153	0.510
191-24-2	Benzo(ghi)perylene	U	0.510	ug/L	0.153	0.510

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:20**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**980 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2308.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.510	ug/L	0.153	0.510
65-85-0	Benzoic acid	U	10.2	ug/L	3.06	10.2
100-51-6	Benzyl alcohol	U	5.10	ug/L	1.53	5.10
85-68-7	Butylbenzylphthalate	U	5.10	ug/L	1.53	5.10
218-01-9	Chrysene	U	0.510	ug/L	0.153	0.510
84-74-2	Di-n-butylphthalate	U	5.10	ug/L	1.53	5.10
117-84-0	Di-n-octylphthalate	U	5.10	ug/L	1.53	5.10
53-70-3	Dibenzo(a,h)anthracene	U	0.510	ug/L	0.153	0.510
132-64-9	Dibenzofuran	U	5.10	ug/L	1.53	5.10
84-66-2	Diethylphthalate	U	5.10	ug/L	1.53	5.10
131-11-3	Dimethylphthalate	U	5.10	ug/L	1.53	5.10
88-85-7	Dinoseb	U	5.10	ug/L	1.53	5.10
122-39-4	Diphenylamine	U	5.10	ug/L	1.53	5.10
206-44-0	Fluoranthene	U	0.510	ug/L	0.153	0.510
86-73-7	Fluorene	U	0.510	ug/L	0.153	0.510
118-74-1	Hexachlorobenzene	U	5.10	ug/L	1.53	5.10
87-68-3	Hexachlorobutadiene	U	5.10	ug/L	1.53	5.10
77-47-4	Hexachlorocyclopentadiene	U	5.10	ug/L	1.53	5.10
67-72-1	Hexachloroethane	U	5.10	ug/L	1.53	5.10
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.510	ug/L	0.153	0.510
78-59-1	Isophorone	U	5.10	ug/L	1.79	5.10
62-75-9	N-Methyl-N-nitrosomethylamine	U	5.10	ug/L	1.53	5.10
924-16-3	N-Nitrosodi-n-butylamine	U	5.10	ug/L	1.53	5.10
55-18-5	N-Nitrosodiethylamine	U	5.10	ug/L	1.53	5.10
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	5.10	ug/L	1.53	5.10
930-55-2	N-Nitrosopyrrolidine	U	5.10	ug/L	1.53	5.10
91-20-3	Naphthalene	U	0.510	ug/L	0.153	0.510
98-95-3	Nitrobenzene	U	5.10	ug/L	1.53	5.10
608-93-5	Pentachlorobenzene	U	5.10	ug/L	1.53	5.10
87-86-5	Pentachlorophenol	U	5.10	ug/L	1.53	5.10
85-01-8	Phenanthrene	U	0.510	ug/L	0.153	0.510
108-95-2	Phenol	U	5.10	ug/L	1.53	5.10
129-00-0	Pyrene	U	0.510	ug/L	0.153	0.510
110-86-1	Pyridine	U	5.10	ug/L	1.53	5.10
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	5.10	ug/L	1.53	5.10
111-91-1	bis(2-Chloroethoxy)methane	U	5.10	ug/L	1.53	5.10
111-44-4	bis(2-Chloroethyl) ether	U	5.10	ug/L	1.53	5.10
117-81-7	bis(2-Ethylhexyl)phthalate	U	5.10	ug/L	1.53	5.10

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487004**	**Date Received:**	**08/18/2015 08:55**		
		Client:	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:20**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**980 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2308.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	5.10	ug/L	1.89	5.10
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	5.10	ug/L	1.53	5.10
95-48-7	o-Cresol	U	5.10	ug/L	1.53	5.10
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	5.10	ug/L	1.53	5.10
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	5.10	ug/L	1.53	5.10

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	49.6	51.0	ug/L	97.2	(33%-126%)
2-Fluorobiphenyl	23.5	25.5	ug/L	92.2	(35%-102%)
2-Fluorophenol	22.6	51.0	ug/L	44.3	(18%-84%)
Nitrobenzene-d5	22.3	25.5	ug/L	87.4	(38%-113%)
Phenol-d5	14.5	51.0	ug/L	28.5	(10%-110%)
p-Terphenyl-d14	27.6	25.5	ug/L	108	(38%-123%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
001569-50-2	3-Penten-2-ol	1.942	4.83	ug/L	86	NJ

Quality Control Summary

Semi-Volatile

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	5-alpha %REC	
1203378631	MB for batch 1502079	81	
1203378632	LCS for batch 1502079DL	87	D
1203378632	LCS for batch 1502079	79	
1203378633	CAMO-15-102578MS	18 *	
1203378634	CAMO-15-102578MSD	21 *	
379487004	CAMO-15-102578	27 *	

Surrogate	Acceptance Limits
5-alpha- = 5-alpha-Androstane	(35%-112%)

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

Semi-Volatile

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203378627	MB for batch 1502076	37	24	73	80	80	98
1203378628	LCS for batch 1502076	33	22	67	77	82	96
379487004	CAMO-15-102578	44	28	87	92	97	108
1203378629	CASA-15-102634MS	38	30	57	62	76	80
1203378630	CASA-15-102634MSD	51	39	76	82	90	92

Surrogate		Acceptance Limits
2FP	= 2-Fluorophenol	(18%-84%)
PHL	= Phenol-d5	(10%-110%)
NBZ	= Nitrobenzene-d5	(38%-113%)
FBP	= 2-Fluorobiphenyl	(35%-102%)
TBP	= 2,4,6-Tribromophenol	(33%-126%)
TPH	= p-Terphenyl-d14	(38%-123%)

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

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502076**
Lab Sample ID **1203378628**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/23/2015 15:52**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS	N-Methyl-N-nitrosomethylam	25.0	0.0	10.3	41	24-82
110-86-1	LCS	Pyridine	25.0	0.0	9.69	39	24-97
62-53-3	LCS	Aniline	25.0	0.0	16.3	65	42-120
108-95-2	LCS	Phenol	25.0	0.0	5.63	23	10-114
111-44-4	LCS	bis(2-Chloroethyl) ether	25.0	0.0	16.1	64	44-111
95-57-8	LCS	2-Chlorophenol	25.0	0.0	14.5	58	44-103
541-73-1	LCS	1,3-Dichlorobenzene	25.0	0.0	14.8	59	27-91
106-46-7	LCS	1,4-Dichlorobenzene	25.0	0.0	15.0	60	27-93
95-50-1	LCS	1,2-Dichlorobenzene	25.0	0.0	15.3	61	29-92
108-60-1	LCS	bis(2-Chloro-1-methylethyl)et	25.0	0.0	15.7	63	30-113
100-51-6	LCS	Benzyl alcohol	25.0	0.0	13.0	52	34-106
95-48-7	LCS	o-Cresol	25.0	0.0	12.5	50	36-99
65794-96-9	LCS	m,p-Cresols	25.0	0.0	12.5	50	34-106
621-64-7	LCS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	25.0	0.0	16.0	64	48-119
67-72-1	LCS	Hexachloroethane	25.0	0.0	14.5	58	25-92
98-95-3	LCS	Nitrobenzene	25.0	0.0	18.1	72	44-117
78-59-1	LCS	Isophorone	25.0	0.0	18.3	73	49-124
88-75-5	LCS	2-Nitrophenol	25.0	0.0	19.1	76	47-110
105-67-9	LCS	2,4-Dimethylphenol	25.0	0.0	15.1	60	43-105
111-91-1	LCS	bis(2-Chloroethoxy)methane	25.0	0.0	18.0	72	48-114
120-83-2	LCS	2,4-Dichlorophenol	25.0	0.0	17.4	70	47-107
65-85-0	LCS	Benzoic acid	50.0	0.0	8.62	17	10-91

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502076**
Lab Sample ID **1203378628**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/23/2015 15:52**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS	4-Chloroaniline	25.0	0.0	22.9	92	48-120
87-68-3	LCS	Hexachlorobutadiene	25.0	0.0	17.3	69	24-93
59-50-7	LCS	Parachlorometa cresol *4-Chloro-3-methylphenol*	25.0	0.0	17.3	69	47-113
91-57-6	LCS	2-Methylnaphthalene	25.0	0.0	16.4	66	33-96
91-20-3	LCS	Naphthalene	25.0	0.0	17.7	71	33-96
90-12-0	LCS	1-Methylnaphthalene	25.0	0.0	18.4	73	34-98
77-47-4	LCS	Hexachlorocyclopentadiene	25.0	0.0	12.9	52	18-87
88-06-2	LCS	2,4,6-Trichlorophenol	25.0	0.0	21.2	85	48-114
95-95-4	LCS	2,4,5-Trichlorophenol	25.0	0.0	20.4	82	50-113
91-58-7	LCS	2-Chloronaphthalene	25.0	0.0	18.9	76	37-100
88-74-4	LCS	2-Nitroaniline *o-Nitroaniline*	25.0	0.0	20.0	80	50-123
99-09-2	LCS	3-Nitroaniline *m-Nitroaniline*	25.0	0.0	23.9	96	48-126
131-11-3	LCS	Dimethylphthalate	25.0	0.0	20.7	83	55-119
606-20-2	LCS	2,6-Dinitrotoluene	25.0	0.0	21.6	86	55-117
121-14-2	LCS	2,4-Dinitrotoluene	25.0	0.0	21.5	86	55-123
208-96-8	LCS	Acenaphthylene	25.0	0.0	19.9	80	43-104
83-32-9	LCS	Acenaphthene	25.0	0.0	19.7	79	42-101
51-28-5	LCS	2,4-Dinitrophenol	25.0	0.0	18.9	76	14-126
132-64-9	LCS	Dibenzofuran	25.0	0.0	19.9	79	46-111
58-90-2	LCS	2,3,4,6-Tetrachlorophenol	25.0	0.0	20.0	80	48-117
84-66-2	LCS	Diethylphthalate	25.0	0.0	19.3	77	55-121
100-02-7	LCS	4-Nitrophenol	25.0	0.0	4.74	19	15-109

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502076**
Lab Sample ID **1203378628**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/23/2015 15:52**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS	Fluorene	25.0	0.0	19.9	80	47-105
7005-72-3	LCS	4-Chlorophenylphenylether	25.0	0.0	21.5	86	44-112
100-01-6	LCS	4-Nitroaniline *p-Nitroaniline*	25.0	0.0	20.5	82	46-144
534-52-1	LCS	2-Methyl-4,6-dinitrophenol	25.0	0.0	24.2	97	41-123
122-39-4	LCS	Diphenylamine	25.0	0.0	21.2	85	51-111
122-66-7	LCS	Azobenzene *1,2-Diphenylhydrazine*	25.0	0.0	20.1	80	43-114
101-55-3	LCS	4-Bromophenylphenylether	25.0	0.0	22.6	91	46-112
118-74-1	LCS	Hexachlorobenzene	25.0	0.0	21.3	85	46-113
87-86-5	LCS	Pentachlorophenol	25.0	0.0	17.8	71	33-111
85-01-8	LCS	Phenanthrene	25.0	0.0	21.5	86	49-106
120-12-7	LCS	Anthracene	25.0	0.0	21.4	86	49-106
84-74-2	LCS	Di-n-butylphthalate	25.0	0.0	19.5	78	52-119
206-44-0	LCS	Fluoranthene	25.0	0.0	19.1	76	48-114
129-00-0	LCS	Pyrene	25.0	0.0	21.0	84	41-115
85-68-7	LCS	Butylbenzylphthalate	25.0	0.0	18.5	74	45-121
117-81-7	LCS	bis(2-Ethylhexyl)phthalate	25.0	0.0	19.1	76	43-120
56-55-3	LCS	Benzo(a)anthracene	25.0	0.0	20.5	82	50-107
218-01-9	LCS	Chrysene	25.0	0.0	21.8	87	48-108
117-84-0	LCS	Di-n-octylphthalate	25.0	0.0	19.5	78	40-122
205-99-2	LCS	Benzo(b)fluoranthene	25.0	0.0	21.4	85	48-110
207-08-9	LCS	Benzo(k)fluoranthene	25.0	0.0	18.1	72	48-112
50-32-8	LCS	Benzo(a)pyrene	25.0	0.0	21.3	85	47-106

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502076**
Lab Sample ID **1203378628**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/23/2015 15:52**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	LCS	Indeno(1,2,3-cd)pyrene	25.0	0.0	24.3	97	37-120
53-70-3	LCS	Dibenzo(a,h)anthracene	25.0	0.0	24.8	99	36-124
191-24-2	LCS	Benzo(ghi)perylene	25.0	0.0	23.6	94	34-121
123-91-1	LCS	1,4-Dioxane	25.0	0.0	11.0	44	29-74
930-55-2	LCS	N-Nitrosopyrrolidine	25.0	0.0	16.8	67	46-111
95-94-3	LCS	1,2,4,5-Tetrachlorobenzene	25.0	0.0	18.6	74	33-94
1912-24-9	LCS	Atrazine	25.0	0.0	12.6	50	30-122
92-87-5	LCS	Benzidine	50.0	0.0	26.2	52	10-137
91-94-1	LCS	3,3'-Dichlorobenzidine	25.0	0.0	22.5	90	37-119
120-82-1	LCS	1,2,4-Trichlorobenzene	25.0	0.0	16.6	66	29-93

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378629**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/23/2015 17:18**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS	N-Methyl-N-nitrosomethylam	58.1	0.00	U	26.4	45	26-97
110-86-1	MS	Pyridine	58.1	0.00	U	23.4	40	20-112
62-53-3	MS	Aniline	58.1	0.00	U	32.1	55	28-126
108-95-2	MS	Phenol	58.1	0.00	U	18.7	32	17-77
111-44-4	MS	bis(2-Chloroethyl) ether	58.1	0.00	U	33.1	57	37-113
95-57-8	MS	2-Chlorophenol	58.1	0.00	U	31.9	55	34-108
541-73-1	MS	1,3-Dichlorobenzene	58.1	0.00	U	28.5	49	25-89
106-46-7	MS	1,4-Dichlorobenzene	58.1	0.00	U	29.2	50	26-90
95-50-1	MS	1,2-Dichlorobenzene	58.1	0.00	U	30.1	52	26-92
108-60-1	MS	bis(2-Chloro-1-methylethyl)et	58.1	0.00	U	32.5	56	26-114
100-51-6	MS	Benzyl alcohol	58.1	0.00	U	28.0	48	28-119
95-48-7	MS	o-Cresol	58.1	0.00	U	30.0	52	30-108
65794-96-9	MS	m,p-Cresols	58.1	0.00	U	31.7	55	31-119
621-64-7	MS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	58.1	0.00	U	33.6	58	40-122
67-72-1	MS	Hexachloroethane	58.1	0.00	U	27.6	47	23-89
98-95-3	MS	Nitrobenzene	58.1	0.00	U	36.9	64	38-123
78-59-1	MS	Isophorone	58.1	0.00	U	38.0	65	40-127
88-75-5	MS	2-Nitrophenol	58.1	0.00	U	38.9	67	35-116
105-67-9	MS	2,4-Dimethylphenol	58.1	0.00	U	34.8	60	34-109
111-91-1	MS	bis(2-Chloroethoxy)methane	58.1	0.00	U	36.9	63	41-116
120-83-2	MS	2,4-Dichlorophenol	58.1	0.00	U	36.9	63	35-113
65-85-0	MS	Benzoic acid	116	0.00	U	54.8	47	12-94

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378629**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/23/2015 17:18**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	58.1	0.00	U	43.7	75	32-122
87-68-3	MS	Hexachlorobutadiene	58.1	0.00	U	32.4	56	23-90
59-50-7	MS	Parachlorometa cresol *4-Chloro-3-methylphenol*	58.1	0.00	U	39.1	67	37-119
91-57-6	MS	2-Methylnaphthalene	58.1	0.00	U	33.4	57	28-102
91-20-3	MS	Naphthalene	58.1	0.00	U	35.1	60	27-101
90-12-0	MS	1-Methylnaphthalene	58.1	0.00	U	37.4	64	28-105
77-47-4	MS	Hexachlorocyclopentadiene	58.1	0.00	U	21.2	37	10-84
88-06-2	MS	2,4,6-Trichlorophenol	58.1	0.00	U	40.8	70	36-120
95-95-4	MS	2,4,5-Trichlorophenol	58.1	0.00	U	42.7	73	37-121
91-58-7	MS	2-Chloronaphthalene	58.1	0.00	U	35.8	62	32-103
88-74-4	MS	2-Nitroaniline *o-Nitroaniline*	58.1	0.00	U	39.6	68	38-126
99-09-2	MS	3-Nitroaniline *m-Nitroaniline*	58.1	0.00	U	49.0	84	30-131
131-11-3	MS	Dimethylphthalate	58.1	0.00	U	43.7	75	45-121
606-20-2	MS	2,6-Dinitrotoluene	58.1	0.00	U	45.7	79	44-120
121-14-2	MS	2,4-Dinitrotoluene	58.1	0.00	U	47.8	82	44-127
208-96-8	MS	Acenaphthylene	58.1	0.00	U	38.5	66	33-110
83-32-9	MS	Acenaphthene	58.1	0.00	U	38.5	66	31-108
51-28-5	MS	2,4-Dinitrophenol	58.1	0.00	U	46.9	81	10-133
132-64-9	MS	Dibenzofuran	58.1	0.00	U	39.7	68	39-114
58-90-2	MS	2,3,4,6-Tetrachlorophenol	58.1	0.00	U	43.2	74	34-125
84-66-2	MS	Diethylphthalate	58.1	0.00	U	42.3	73	44-124
100-02-7	MS	4-Nitrophenol	58.1	0.00	U	20.5	35	10-83

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378629**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/23/2015 17:18**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	58.1	0.00	U	41.0	71	36-111
7005-72-3	MS	4-Chlorophenylphenylether	58.1	0.00	U	43.7	75	37-112
100-01-6	MS	4-Nitroaniline *p-Nitroaniline*	58.1	0.00	U	45.7	79	27-149
534-52-1	MS	2-Methyl-4,6-dinitrophenol	58.1	0.00	U	52.9	91	28-131
122-39-4	MS	Diphenylamine	58.1	0.00	U	39.4	68	34-117
122-66-7	MS	Azobenzene *1,2-Diphenylhydrazine*	58.1	0.00	U	38.1	66	36-115
101-55-3	MS	4-Bromophenylphenylether	58.1	0.00	U	43.5	75	39-112
118-74-1	MS	Hexachlorobenzene	58.1	0.00	U	41.3	71	39-114
87-86-5	MS	Pentachlorophenol	58.1	0.00	U	39.1	67	24-122
85-01-8	MS	Phenanthrene	58.1	0.00	U	42.6	73	37-112
120-12-7	MS	Anthracene	58.1	0.00	U	43.0	74	36-114
84-74-2	MS	Di-n-butylphthalate	58.1	0.00	U	42.1	72	40-122
206-44-0	MS	Fluoranthene	58.1	0.00	U	41.1	71	35-118
129-00-0	MS	Pyrene	58.1	0.00	U	40.9	70	32-121
85-68-7	MS	Butylbenzylphthalate	58.1	0.00	U	39.6	68	36-124
117-81-7	MS	bis(2-Ethylhexyl)phthalate	58.1	0.00	U	41.6	72	35-123
56-55-3	MS	Benzo(a)anthracene	58.1	0.00	U	41.2	71	38-113
218-01-9	MS	Chrysene	58.1	0.00	U	43.6	75	37-114
117-84-0	MS	Di-n-octylphthalate	58.1	0.00	U	43.3	74	32-124
205-99-2	MS	Benzo(b)fluoranthene	58.1	0.00	U	44.7	77	38-116
207-08-9	MS	Benzo(k)fluoranthene	58.1	0.00	U	37.9	65	39-117
50-32-8	MS	Benzo(a)pyrene	58.1	0.00	U	43.0	74	37-112

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378629**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/23/2015 17:18**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
193-39-5	MS	Indeno(1,2,3-cd)pyrene	58.1	0.00	U	44.3	76	25-122
53-70-3	MS	Dibenzo(a,h)anthracene	58.1	0.00	U	42.1	72	27-125
191-24-2	MS	Benzo(ghi)perylene	58.1	0.00	U	42.0	72	24-121
123-91-1	MS	1,4-Dioxane	58.1	0.00	U	27.7	48	27-94
930-55-2	MS	N-Nitrosopyrrolidine	58.1	0.00	U	37.6	65	43-117
95-94-3	MS	1,2,4,5-Tetrachlorobenzene	58.1	0.00	U	34.1	59	28-96
1912-24-9	MS	Atrazine	58.1	0.00	U	25.7	44	18-119
92-87-5	MS	Benzidine	116	0.00	U	8.78	8 *	10-127
91-94-1	MS	3,3'-Dichlorobenzidine	58.1	0.00	U	41.5	71	19-120
120-82-1	MS	1,2,4-Trichlorobenzene	58.1	0.00	U	31.7	55	26-92

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MSD**
Lab Sample ID **1203378630**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/23/2015 17:46**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62-75-9	MSD	N-Methyl-N-nitrosomethylam	58.1	0.00	U	37.7	65	26-97	35 *	0-30
110-86-1	MSD	Pyridine	58.1	0.00	U	34.3	59	20-112	38 *	0-30
62-53-3	MSD	Aniline	58.1	0.00	U	43.1	74	28-126	29	0-30
108-95-2	MSD	Phenol	58.1	0.00	U	24.6	42	17-77	28	0-30
111-44-4	MSD	bis(2-Chloroethyl) ether	58.1	0.00	U	43.0	74	37-113	26	0-30
95-57-8	MSD	2-Chlorophenol	58.1	0.00	U	42.5	73	34-108	29	0-30
541-73-1	MSD	1,3-Dichlorobenzene	58.1	0.00	U	40.6	70	25-89	35 *	0-30
106-46-7	MSD	1,4-Dichlorobenzene	58.1	0.00	U	41.4	71	26-90	35 *	0-30
95-50-1	MSD	1,2-Dichlorobenzene	58.1	0.00	U	40.9	70	26-92	30	0-30
108-60-1	MSD	bis(2-Chloro-1-methylethyl)et	58.1	0.00	U	41.0	71	26-114	23	0-30
100-51-6	MSD	Benzyl alcohol	58.1	0.00	U	36.2	62	28-119	25	0-30
95-48-7	MSD	o-Cresol	58.1	0.00	U	38.1	66	30-108	24	0-30
65794-96-9	MSD	m,p-Cresols	58.1	0.00	U	39.9	69	31-119	23	0-30
621-64-7	MSD	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	58.1	0.00	U	40.0	69	40-122	17	0-30
67-72-1	MSD	Hexachloroethane	58.1	0.00	U	39.0	67	23-89	35 *	0-30
98-95-3	MSD	Nitrobenzene	58.1	0.00	U	50.6	87	38-123	31 *	0-30
78-59-1	MSD	Isophorone	58.1	0.00	U	47.3	81	40-127	22	0-30
88-75-5	MSD	2-Nitrophenol	58.1	0.00	U	53.0	91	35-116	31 *	0-30
105-67-9	MSD	2,4-Dimethylphenol	58.1	0.00	U	42.2	73	34-109	19	0-30
111-91-1	MSD	bis(2-Chloroethoxy)methane	58.1	0.00	U	47.4	81	41-116	25	0-30
120-83-2	MSD	2,4-Dichlorophenol	58.1	0.00	U	48.2	83	35-113	27	0-30
65-85-0	MSD	Benzoic acid	116	0.00	U	63.7	55	12-94	15	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MSD**
Lab Sample ID **1203378630**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/23/2015 17:46**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD	4-Chloroaniline	58.1	0.00	U	56.2	97	32-122	25	0-30
87-68-3	MSD	Hexachlorobutadiene	58.1	0.00	U	47.1	81	23-90	37 *	0-30
59-50-7	MSD	Parachlorometa cresol *4-Chloro-3-methylphenol*	58.1	0.00	U	46.4	80	37-119	17	0-30
91-57-6	MSD	2-Methylnaphthalene	58.1	0.00	U	42.6	73	28-102	24	0-30
91-20-3	MSD	Naphthalene	58.1	0.00	U	47.7	82	27-101	31 *	0-30
90-12-0	MSD	1-Methylnaphthalene	58.1	0.00	U	46.5	80	28-105	22	0-30
77-47-4	MSD	Hexachlorocyclopentadiene	58.1	0.00	U	32.8	56	10-84	43 *	0-30
88-06-2	MSD	2,4,6-Trichlorophenol	58.1	0.00	U	55.2	95	36-120	30	0-30
95-95-4	MSD	2,4,5-Trichlorophenol	58.1	0.00	U	55.5	95	37-121	26	0-30
91-58-7	MSD	2-Chloronaphthalene	58.1	0.00	U	49.3	85	32-103	32 *	0-30
88-74-4	MSD	2-Nitroaniline *o-Nitroaniline*	58.1	0.00	U	51.2	88	38-126	26	0-30
99-09-2	MSD	3-Nitroaniline *m-Nitroaniline*	58.1	0.00	U	61.2	105	30-131	22	0-30
131-11-3	MSD	Dimethylphthalate	58.1	0.00	U	54.2	93	45-121	22	0-30
606-20-2	MSD	2,6-Dinitrotoluene	58.1	0.00	U	57.2	98	44-120	22	0-30
121-14-2	MSD	2,4-Dinitrotoluene	58.1	0.00	U	57.5	99	44-127	18	0-30
208-96-8	MSD	Acenaphthylene	58.1	0.00	U	51.2	88	33-110	28	0-30
83-32-9	MSD	Acenaphthene	58.1	0.00	U	51.4	88	31-108	29	0-30
51-28-5	MSD	2,4-Dinitrophenol	58.1	0.00	U	55.9	96	10-133	18	0-30
132-64-9	MSD	Dibenzofuran	58.1	0.00	U	51.1	88	39-114	25	0-30
58-90-2	MSD	2,3,4,6-Tetrachlorophenol	58.1	0.00	U	53.7	92	34-125	22	0-30
84-66-2	MSD	Diethylphthalate	58.1	0.00	U	50.4	87	44-124	17	0-30
100-02-7	MSD	4-Nitrophenol	58.1	0.00	U	24.5	42	10-83	18	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MSD**
Lab Sample ID **1203378630**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/23/2015 17:46**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
86-73-7	MSD	Fluorene	58.1	0.00	U	52.2	90	36-111	24	0-30
7005-72-3	MSD	4-Chlorophenylphenylether	58.1	0.00	U	55.3	95	37-112	23	0-30
100-01-6	MSD	4-Nitroaniline *p-Nitroaniline*	58.1	0.00	U	55.2	95	27-149	19	0-30
534-52-1	MSD	2-Methyl-4,6-dinitrophenol	58.1	0.00	U	65.4	112	28-131	21	0-30
122-39-4	MSD	Diphenylamine	58.1	0.00	U	54.1	93	34-117	31 *	0-30
122-66-7	MSD	Azobenzene *1,2-Diphenylhydrazine*	58.1	0.00	U	50.5	87	36-115	28	0-30
101-55-3	MSD	4-Bromophenylphenylether	58.1	0.00	U	57.1	98	39-112	27	0-30
118-74-1	MSD	Hexachlorobenzene	58.1	0.00	U	55.3	95	39-114	29	0-30
87-86-5	MSD	Pentachlorophenol	58.1	0.00	U	50.2	86	24-122	25	0-30
85-01-8	MSD	Phenanthrene	58.1	0.00	U	56.6	97	37-112	28	0-30
120-12-7	MSD	Anthracene	58.1	0.00	U	56.7	98	36-114	28	0-30
84-74-2	MSD	Di-n-butylphthalate	58.1	0.00	U	52.1	90	40-122	21	0-30
206-44-0	MSD	Fluoranthene	58.1	0.00	U	54.5	94	35-118	28	0-30
129-00-0	MSD	Pyrene	58.1	0.00	U	49.5	85	32-121	19	0-30
85-68-7	MSD	Butylbenzylphthalate	58.1	0.00	U	46.2	80	36-124	15	0-30
117-81-7	MSD	bis(2-Ethylhexyl)phthalate	58.1	0.00	U	50.2	86	35-123	19	0-30
56-55-3	MSD	Benzo(a)anthracene	58.1	0.00	U	53.4	92	38-113	26	0-30
218-01-9	MSD	Chrysene	58.1	0.00	U	57.1	98	37-114	27	0-30
117-84-0	MSD	Di-n-octylphthalate	58.1	0.00	U	56.0	96	32-124	26	0-30
205-99-2	MSD	Benzo(b)fluoranthene	58.1	0.00	U	54.8	94	38-116	20	0-30
207-08-9	MSD	Benzo(k)fluoranthene	58.1	0.00	U	46.7	80	39-117	21	0-30
50-32-8	MSD	Benzo(a)pyrene	58.1	0.00	U	56.1	97	37-112	26	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MSD**
Lab Sample ID **1203378630**
Instrument: **MSD4.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/23/2015 17:46**
Prep Batch ID: **1502076**
Batch ID: **1502077**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
193-39-5	MSD	Indeno(1,2,3-cd)pyrene	58.1	0.00	U	68.0	117	25-122	42 *	0-30
53-70-3	MSD	Dibenzo(a,h)anthracene	58.1	0.00	U	69.9	120	27-125	50 *	0-30
191-24-2	MSD	Benzo(ghi)perylene	58.1	0.00	U	67.0	115	24-121	46 *	0-30
123-91-1	MSD	1,4-Dioxane	58.1	0.00	U	40.2	69	27-94	37 *	0-30
930-55-2	MSD	N-Nitrosopyrrolidine	58.1	0.00	U	43.5	75	43-117	15	0-30
95-94-3	MSD	1,2,4,5-Tetrachlorobenzene	58.1	0.00	U	49.0	84	28-96	36 *	0-30
1912-24-9	MSD	Atrazine	58.1	0.00	U	31.3	54	18-119	20	0-30
92-87-5	MSD	Benzidine	116	0.00	U	31.6	27	10-127	113 *	0-30
91-94-1	MSD	3,3'-Dichlorobenzidine	58.1	0.00	U	61.3	105	19-120	38 *	0-30
120-82-1	MSD	1,2,4-Trichlorobenzene	58.1	0.00	U	44.8	77	26-92	34 *	0-30

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502079**
Lab Sample ID **1203378632**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/24/2015 15:49**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS	N-Methyl-N-nitrosomethylam	5.00	0.0	1.46	29	20-130
111-44-4	LCS	bis(2-Chloroethyl) ether	5.00	0.0	3.59	72	50-130
621-64-7	LCS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	5.00	0.0	3.89	78	50-130
91-57-6	LCS	2-Methylnaphthalene	5.00	0.0	4.08	82	35-103
91-20-3	LCS	Naphthalene	5.00	0.0	3.79	76	33-102
90-12-0	LCS	1-Methylnaphthalene	5.00	0.0	4.04	81	35-105
91-58-7	LCS	2-Chloronaphthalene	5.00	0.0	3.73	75	22-132
208-96-8	LCS	Acenaphthylene	5.00	0.0	4.20	84	37-112
83-32-9	LCS	Acenaphthene	5.00	0.0	3.93	79	40-107
86-73-7	LCS	Fluorene	5.00	0.0	4.52	90	41-113
85-01-8	LCS	Phenanthrene	5.00	0.0	4.09	82	45-111
120-12-7	LCS	Anthracene	5.00	0.0	4.50	90	44-113
206-44-0	LCS	Fluoranthene	5.00	0.0	4.61	92	40-120
129-00-0	LCS	Pyrene	5.00	0.0	3.64	73	42-123
56-55-3	LCS	Benzo(a)anthracene	5.00	0.0	4.39	88	47-111
218-01-9	LCS	Chrysene	5.00	0.0	4.31	86	51-117
205-99-2	LCS	Benzo(b)fluoranthene	5.00	0.0	4.44	89	48-129
207-08-9	LCS	Benzo(k)fluoranthene	5.00	0.0	4.58	92	51-125
50-32-8	LCS	Benzo(a)pyrene	5.00	0.0	4.52	90	46-124
193-39-5	LCS	Indeno(1,2,3-cd)pyrene	5.00	0.0	4.42	88	39-128
53-70-3	LCS	Dibenzo(a,h)anthracene	5.00	0.0	4.64	93	38-128
191-24-2	LCS	Benzo(ghi)perylene	5.00	0.0	4.37	87	39-124

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502079**
Lab Sample ID **1203378632**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/24/2015 15:49**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
55-18-5	LCS	N-Nitrosodiethylamine	5.00	0.0	3.66	73	50-130
930-55-2	LCS	N-Nitrosopyrrolidine	5.00	0.0	3.29	66	50-130
924-16-3	LCS	N-Nitrosodi-n-butylamine	5.00	0.0	4.03	81	50-130
92-87-5	LCS	Benzidine	25.0	0.0	6.61	26 *	50-130

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502079DL**
Lab Sample ID **1203378632**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/24/2015 15:19**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 2

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
91-94-1	LCS	3,3'-Dichlorobenzidine	25.0	0.0	24.3	97	50-130

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102578MS**
Lab Sample ID **1203378633**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/24/2015 16:48**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	MS	N-Methyl-N-nitrosomethylam	10.8	0.00	U	5.12	48	20-130
111-44-4	MS	bis(2-Chloroethyl) ether	10.8	0.00	U	7.83	73	40-130
621-64-7	MS	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	10.8	0.00	U	8.80	82	40-130
91-57-6	MS	2-Methylnaphthalene	10.8	0.00	U	8.60	80	32-108
91-20-3	MS	Naphthalene	10.8	0.00	U	8.02	75	33-102
90-12-0	MS	1-Methylnaphthalene	10.8	0.00	U	8.73	81	25-118
91-58-7	MS	2-Chloronaphthalene	10.8	0.00	U	7.46	69	20-135
208-96-8	MS	Acenaphthylene	10.8	0.00	U	8.56	80	36-104
83-32-9	MS	Acenaphthene	10.8	0.00	U	8.19	76	38-103
86-73-7	MS	Fluorene	10.8	0.00	U	9.23	86	41-113
85-01-8	MS	Phenanthrene	10.8	0.00	U	8.77	82	39-107
120-12-7	MS	Anthracene	10.8	0.00	U	9.38	87	28-113
206-44-0	MS	Fluoranthene	10.8	0.00	U	9.12	85	36-120
129-00-0	MS	Pyrene	10.8	0.00	U	8.15	76	28-125
56-55-3	MS	Benzo(a)anthracene	10.8	0.00	U	8.71	81	43-103
218-01-9	MS	Chrysene	10.8	0.00	U	8.26	77	51-117
205-99-2	MS	Benzo(b)fluoranthene	10.8	0.00	U	6.28	58	33-123
207-08-9	MS	Benzo(k)fluoranthene	10.8	0.00	U	5.53	51	39-119
50-32-8	MS	Benzo(a)pyrene	10.8	0.00	U	5.91	55	28-121
193-39-5	MS	Indeno(1,2,3-cd)pyrene	10.8	0.00	U	4.24	39	39-128
53-70-3	MS	Dibenzo(a,h)anthracene	10.8	0.00	U	3.74	35	30-119
191-24-2	MS	Benzo(ghi)perylene	10.8	0.00	U	3.98	37 *	39-124

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102578MS**
Lab Sample ID **1203378633**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/24/2015 16:48**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
55-18-5	MS	N-Nitrosodiethylamine	10.8	0.00	U	8.28	77	40-130
930-55-2	MS	N-Nitrosopyrrolidine	10.8	0.00	U	8.62	80	40-130
924-16-3	MS	N-Nitrosodi-n-butylamine	10.8	0.00	U	8.99	84	40-130
92-87-5	MS	Benzidine	53.8	0.00	U	9.31	17 *	40-130
91-94-1	MS	3,3'-Dichlorobenzidine	53.8	0.00	U	52.6	98	40-130

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102578MSD**
Lab Sample ID **1203378634**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/24/2015 17:17**
Prep Batch ID: **1502079**
Batch ID: **1502080**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
62-75-9	MSD	N-Methyl-N-nitrosomethylam	10.8	0.00	U	5.27	49	20-130	3	0-30
111-44-4	MSD	bis(2-Chloroethyl) ether	10.8	0.00	U	7.87	73	40-130	1	0-30
621-64-7	MSD	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	10.8	0.00	U	8.73	81	40-130	1	0-30
91-57-6	MSD	2-Methylnaphthalene	10.8	0.00	U	8.77	82	32-108	2	0-20
91-20-3	MSD	Naphthalene	10.8	0.00	U	8.19	76	33-102	2	0-20
90-12-0	MSD	1-Methylnaphthalene	10.8	0.00	U	8.80	82	25-118	1	0-20
91-58-7	MSD	2-Chloronaphthalene	10.8	0.00	U	7.87	73	20-135	5	0-20
208-96-8	MSD	Acenaphthylene	10.8	0.00	U	8.90	83	36-104	4	0-20
83-32-9	MSD	Acenaphthene	10.8	0.00	U	8.41	78	38-103	3	0-20
86-73-7	MSD	Fluorene	10.8	0.00	U	9.42	88	41-113	2	0-20
85-01-8	MSD	Phenanthrene	10.8	0.00	U	9.01	84	39-107	3	0-20
120-12-7	MSD	Anthracene	10.8	0.00	U	9.63	90	28-113	3	0-20
206-44-0	MSD	Fluoranthene	10.8	0.00	U	8.99	84	36-120	1	0-20
129-00-0	MSD	Pyrene	10.8	0.00	U	9.63	90	28-125	17	0-20
56-55-3	MSD	Benzo(a)anthracene	10.8	0.00	U	9.31	87	43-103	7	0-20
218-01-9	MSD	Chrysene	10.8	0.00	U	8.92	83	51-117	8	0-20
205-99-2	MSD	Benzo(b)fluoranthene	10.8	0.00	U	7.05	66	33-123	12	0-20
207-08-9	MSD	Benzo(k)fluoranthene	10.8	0.00	U	6.54	61	39-119	17	0-20
50-32-8	MSD	Benzo(a)pyrene	10.8	0.00	U	6.84	64	28-121	15	0-26
193-39-5	MSD	Indeno(1,2,3-cd)pyrene	10.8	0.00	U	4.88	45	39-128	14	0-20
53-70-3	MSD	Dibenzo(a,h)anthracene	10.8	0.00	U	4.43	41	30-119	17	0-20
191-24-2	MSD	Benzo(ghi)perylene	10.8	0.00	U	4.80	45	39-124	19	0-20

Semi-Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102578MSD**
Lab Sample ID **1203378634**
Instrument: **MSD2.I**
Analyst: **JMB3**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike Duplicate**
Matrix: **W**
Analysis Date: **08/24/2015 17:17**
Dilution: 1
Prep Batch ID: **1502079**
Batch ID: **1502080**

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
55-18-5	MSD	N-Nitrosodiethylamine	10.8	0.00	U	8.17	76	40-130	1	0-30
930-55-2	MSD	N-Nitrosopyrrolidine	10.8	0.00	U	8.69	81	40-130	1	0-30
924-16-3	MSD	N-Nitrosodi-n-butylamine	10.8	0.00	U	9.08	84	40-130	1	0-30
92-87-5	MSD	Benzidine	53.8	0.00	U	8.99	17 *	40-130	4	0-30
91-94-1	MSD	3,3'-Dichlorobenzidine	53.8	0.00	U	51.1	95	40-130	3	0-30

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1502076**	**Instrument ID:**	**MSD4.I**	**Data File:**	**s082315.B\s4h2306.D**
Lab Sample ID:	**1203378627**	**Prep Date:**	**08/21/2015 04:20**	**Analyzed:**	**08/23/15 15:18**
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 1502076	1203378628	s082315.B\s4h2307.D	08/23/15	1552
02 CAMO-15-102578	379487004	s082315.B\s4h2308.D	08/23/15	1620
03 CASA-15-102634MS	1203378629	s082315.B\s4h2310.D	08/23/15	1718
04 CASA-15-102634MSD	1203378630	s082315.B\s4h2311.D	08/23/15	1746

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1502079**	**Instrument ID:**	**MSD2.I**	**Data File:**	**s082415.B\s2h2410.D**
Lab Sample ID:	**1203378631**	**Prep Date:**	**08/21/2015 04:20**	**Analyzed:**	**08/24/15 14:50**
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 1502079DL	1203378632	s082415.B\s2h2411.D	08/24/15	1519
02	LCS for batch 1502079	1203378632	s082415.B\s2h2412.D	08/24/15	1549
03	CAMO-15-102578MS	1203378633	s082415.B\s2h2414.D	08/24/15	1648
04	CAMO-15-102578MSD	1203378634	s082415.B\s2h2415.D	08/24/15	1717
05	CAMO-15-102578	379487004	s082415.B\s2h2418.D	08/24/15	1845

Quality Control Data

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378627**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2306.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	5.00	ug/L	1.50	5.00
120-82-1	1,2,4-Trichlorobenzene	U	5.00	ug/L	1.50	5.00
95-50-1	1,2-Dichlorobenzene	U	5.00	ug/L	1.50	5.00
122-66-7	Azobenzene	U	5.00	ug/L	1.50	5.00
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene	U	5.00	ug/L	1.50	5.00
106-46-7	1,4-Dichlorobenzene	U	5.00	ug/L	1.50	5.00
123-91-1	1,4-Dioxane	U	5.00	ug/L	1.50	5.00
90-12-0	1-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
58-90-2	2,3,4,6-Tetrachlorophenol	U	5.00	ug/L	1.50	5.00
95-95-4	2,4,5-Trichlorophenol	U	5.00	ug/L	1.50	5.00
88-06-2	2,4,6-Trichlorophenol	U	5.00	ug/L	1.50	5.00
120-83-2	2,4-Dichlorophenol	U	5.00	ug/L	1.50	5.00
105-67-9	2,4-Dimethylphenol	U	5.00	ug/L	1.50	5.00
51-28-5	2,4-Dinitrophenol	U	10.0	ug/L	2.50	10.0
121-14-2	2,4-Dinitrotoluene	U	5.00	ug/L	1.50	5.00
606-20-2	2,6-Dinitrotoluene	U	5.00	ug/L	1.50	5.00
91-58-7	2-Chloronaphthalene	U	0.500	ug/L	0.205	0.500
95-57-8	2-Chlorophenol	U	5.00	ug/L	1.50	5.00
534-52-1	2-Methyl-4,6-dinitrophenol	U	5.00	ug/L	1.50	5.00
91-57-6	2-Methylnaphthalene	U	0.500	ug/L	0.150	0.500
88-75-5	2-Nitrophenol	U	5.00	ug/L	1.50	5.00
91-94-1	3,3'-Dichlorobenzidine	U	5.00	ug/L	1.50	5.00
101-55-3	4-Bromophenylphenylether	U	5.00	ug/L	1.50	5.00
59-50-7	Parachlorometa cresol	U	5.00	ug/L	1.50	5.00
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline	U	5.00	ug/L	1.65	5.00
7005-72-3	4-Chlorophenylphenylether	U	5.00	ug/L	1.50	5.00
100-02-7	4-Nitrophenol	U	5.00	ug/L	1.50	5.00
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
62-53-3	Aniline	U	5.00	ug/L	2.10	5.00
120-12-7	Anthracene	U	0.500	ug/L	0.150	0.500
1912-24-9	Atrazine	U	5.00	ug/L	1.50	5.00
92-87-5	Benzidine	U	5.00	ug/L	1.95	5.00
56-55-3	Benzo(a)anthracene	U	0.500	ug/L	0.150	0.500
50-32-8	Benzo(a)pyrene	U	0.500	ug/L	0.150	0.500
205-99-2	Benzo(b)fluoranthene	U	0.500	ug/L	0.150	0.500
191-24-2	Benzo(ghi)perylene	U	0.500	ug/L	0.150	0.500

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378627**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2306.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	0.500	ug/L	0.150	0.500
65-85-0	Benzoic acid	U	10.0	ug/L	3.00	10.0
100-51-6	Benzyl alcohol	U	5.00	ug/L	1.50	5.00
85-68-7	Butylbenzylphthalate	U	5.00	ug/L	1.50	5.00
218-01-9	Chrysene	U	0.500	ug/L	0.150	0.500
84-74-2	Di-n-butylphthalate	U	5.00	ug/L	1.50	5.00
117-84-0	Di-n-octylphthalate	U	5.00	ug/L	1.50	5.00
53-70-3	Dibenzo(a,h)anthracene	U	0.500	ug/L	0.150	0.500
132-64-9	Dibenzofuran	U	5.00	ug/L	1.50	5.00
84-66-2	Diethylphthalate	U	5.00	ug/L	1.50	5.00
131-11-3	Dimethylphthalate	U	5.00	ug/L	1.50	5.00
88-85-7	Dinoseb	U	5.00	ug/L	1.50	5.00
122-39-4	Diphenylamine	U	5.00	ug/L	1.50	5.00
206-44-0	Fluoranthene	U	0.500	ug/L	0.150	0.500
86-73-7	Fluorene	U	0.500	ug/L	0.150	0.500
118-74-1	Hexachlorobenzene	U	5.00	ug/L	1.50	5.00
87-68-3	Hexachlorobutadiene	U	5.00	ug/L	1.50	5.00
77-47-4	Hexachlorocyclopentadiene	U	5.00	ug/L	1.50	5.00
67-72-1	Hexachloroethane	U	5.00	ug/L	1.50	5.00
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.500	ug/L	0.150	0.500
78-59-1	Isophorone	U	5.00	ug/L	1.75	5.00
62-75-9	N-Methyl-N-nitrosomethylamine	U	5.00	ug/L	1.50	5.00
924-16-3	N-Nitrosodi-n-butylamine	U	5.00	ug/L	1.50	5.00
55-18-5	N-Nitrosodiethylamine	U	5.00	ug/L	1.50	5.00
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	5.00	ug/L	1.50	5.00
930-55-2	N-Nitrosopyrrolidine	U	5.00	ug/L	1.50	5.00
91-20-3	Naphthalene	U	0.500	ug/L	0.150	0.500
98-95-3	Nitrobenzene	U	5.00	ug/L	1.50	5.00
608-93-5	Pentachlorobenzene	U	5.00	ug/L	1.50	5.00
87-86-5	Pentachlorophenol	U	5.00	ug/L	1.50	5.00
85-01-8	Phenanthrene	U	0.500	ug/L	0.150	0.500
108-95-2	Phenol	U	5.00	ug/L	1.50	5.00
129-00-0	Pyrene	U	0.500	ug/L	0.150	0.500
110-86-1	Pyridine	U	5.00	ug/L	1.50	5.00
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	5.00	ug/L	1.50	5.00
111-91-1	bis(2-Chloroethoxy)methane	U	5.00	ug/L	1.50	5.00
111-44-4	bis(2-Chloroethyl) ether	U	5.00	ug/L	1.50	5.00
117-81-7	bis(2-Ethylhexyl)phthalate	U	5.00	ug/L	1.50	5.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378627**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2306.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	5.00	ug/L	1.85	5.00
99-09-2	3-Nitroaniline *m-Nitroaniline*	U	5.00	ug/L	1.50	5.00
95-48-7	o-Cresol	U	5.00	ug/L	1.50	5.00
88-74-4	2-Nitroaniline *o-Nitroaniline*	U	5.00	ug/L	1.50	5.00
100-01-6	4-Nitroaniline *p-Nitroaniline*	U	5.00	ug/L	1.50	5.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	39.9	50.0	ug/L	79.8	(33%-126%)
2-Fluorobiphenyl	19.9	25.0	ug/L	79.6	(35%-102%)
2-Fluorophenol	18.4	50.0	ug/L	36.8	(18%-84%)
Nitrobenzene-d5	18.3	25.0	ug/L	73.2	(38%-113%)
Phenol-d5	11.9	50.0	ug/L	23.8	(10%-110%)
p-Terphenyl-d14	24.5	25.0	ug/L	97.8	(38%-123%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown	1.942	4.08	ug/L	0	J

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378628**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:52**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2307.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		18.6	ug/L	1.50	5.00
120-82-1	1,2,4-Trichlorobenzene		16.6	ug/L	1.50	5.00
95-50-1	1,2-Dichlorobenzene		15.3	ug/L	1.50	5.00
122-66-7	Azobenzene		20.1	ug/L	1.50	5.00
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		14.8	ug/L	1.50	5.00
106-46-7	1,4-Dichlorobenzene		15.0	ug/L	1.50	5.00
123-91-1	1,4-Dioxane		11.0	ug/L	1.50	5.00
90-12-0	1-Methylnaphthalene		18.4	ug/L	0.150	0.500
58-90-2	2,3,4,6-Tetrachlorophenol		20.0	ug/L	1.50	5.00
95-95-4	2,4,5-Trichlorophenol		20.4	ug/L	1.50	5.00
88-06-2	2,4,6-Trichlorophenol		21.2	ug/L	1.50	5.00
120-83-2	2,4-Dichlorophenol		17.4	ug/L	1.50	5.00
105-67-9	2,4-Dimethylphenol		15.1	ug/L	1.50	5.00
51-28-5	2,4-Dinitrophenol		18.9	ug/L	2.50	10.0
121-14-2	2,4-Dinitrotoluene		21.5	ug/L	1.50	5.00
606-20-2	2,6-Dinitrotoluene		21.6	ug/L	1.50	5.00
91-58-7	2-Chloronaphthalene		18.9	ug/L	0.205	0.500
95-57-8	2-Chlorophenol		14.5	ug/L	1.50	5.00
534-52-1	2-Methyl-4,6-dinitrophenol		24.2	ug/L	1.50	5.00
91-57-6	2-Methylnaphthalene		16.4	ug/L	0.150	0.500
88-75-5	2-Nitrophenol		19.1	ug/L	1.50	5.00
91-94-1	3,3'-Dichlorobenzidine		22.5	ug/L	1.50	5.00
101-55-3	4-Bromophenylphenylether		22.6	ug/L	1.50	5.00
59-50-7	Parachlorometa cresol		17.3	ug/L	1.50	5.00
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		22.9	ug/L	1.65	5.00
7005-72-3	4-Chlorophenylphenylether		21.5	ug/L	1.50	5.00
100-02-7	4-Nitrophenol	J	4.74	ug/L	1.50	5.00
83-32-9	Acenaphthene		19.7	ug/L	0.150	0.500
208-96-8	Acenaphthylene		19.9	ug/L	0.150	0.500
62-53-3	Aniline		16.3	ug/L	2.10	5.00
120-12-7	Anthracene		21.4	ug/L	0.150	0.500
1912-24-9	Atrazine		12.6	ug/L	1.50	5.00
92-87-5	Benzidine		26.2	ug/L	1.95	5.00
56-55-3	Benzo(a)anthracene		20.5	ug/L	0.150	0.500
50-32-8	Benzo(a)pyrene		21.3	ug/L	0.150	0.500
205-99-2	Benzo(b)fluoranthene		21.4	ug/L	0.150	0.500
191-24-2	Benzo(ghi)perylene		23.6	ug/L	0.150	0.500

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378628**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:52**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2307.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		18.1	ug/L	0.150	0.500
65-85-0	Benzoic acid	J	8.62	ug/L	3.00	10.0
100-51-6	Benzyl alcohol		13.0	ug/L	1.50	5.00
85-68-7	Butylbenzylphthalate		18.5	ug/L	1.50	5.00
218-01-9	Chrysene		21.8	ug/L	0.150	0.500
84-74-2	Di-n-butylphthalate		19.5	ug/L	1.50	5.00
117-84-0	Di-n-octylphthalate		19.5	ug/L	1.50	5.00
53-70-3	Dibenzo(a,h)anthracene		24.8	ug/L	0.150	0.500
132-64-9	Dibenzofuran		19.9	ug/L	1.50	5.00
84-66-2	Diethylphthalate		19.3	ug/L	1.50	5.00
131-11-3	Dimethylphthalate		20.7	ug/L	1.50	5.00
88-85-7	Dinoseb	U	5.00	ug/L	1.50	5.00
122-39-4	Diphenylamine		21.2	ug/L	1.50	5.00
206-44-0	Fluoranthene		19.1	ug/L	0.150	0.500
86-73-7	Fluorene		19.9	ug/L	0.150	0.500
118-74-1	Hexachlorobenzene		21.3	ug/L	1.50	5.00
87-68-3	Hexachlorobutadiene		17.3	ug/L	1.50	5.00
77-47-4	Hexachlorocyclopentadiene		12.9	ug/L	1.50	5.00
67-72-1	Hexachloroethane		14.5	ug/L	1.50	5.00
193-39-5	Indeno(1,2,3-cd)pyrene		24.3	ug/L	0.150	0.500
78-59-1	Isophorone		18.3	ug/L	1.75	5.00
62-75-9	N-Methyl-N-nitrosomethylamine		10.3	ug/L	1.50	5.00
924-16-3	N-Nitrosodi-n-butylamine	U	5.00	ug/L	1.50	5.00
55-18-5	N-Nitrosodiethylamine	U	5.00	ug/L	1.50	5.00
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		16.0	ug/L	1.50	5.00
930-55-2	N-Nitrosopyrrolidine		16.8	ug/L	1.50	5.00
91-20-3	Naphthalene		17.7	ug/L	0.150	0.500
98-95-3	Nitrobenzene		18.1	ug/L	1.50	5.00
608-93-5	Pentachlorobenzene	U	5.00	ug/L	1.50	5.00
87-86-5	Pentachlorophenol		17.8	ug/L	1.50	5.00
85-01-8	Phenanthrene		21.5	ug/L	0.150	0.500
108-95-2	Phenol		5.63	ug/L	1.50	5.00
129-00-0	Pyrene		21.0	ug/L	0.150	0.500
110-86-1	Pyridine		9.69	ug/L	1.50	5.00
108-60-1	bis(2-Chloro-1-methylethyl)ether		15.7	ug/L	1.50	5.00
111-91-1	bis(2-Chloroethoxy)methane		18.0	ug/L	1.50	5.00
111-44-4	bis(2-Chloroethyl) ether		16.1	ug/L	1.50	5.00
117-81-7	bis(2-Ethylhexyl)phthalate		19.1	ug/L	1.50	5.00

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378628**				
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502076**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:52**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2307.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		12.5	ug/L	1.85	5.00
99-09-2	3-Nitroaniline *m-Nitroaniline*		23.9	ug/L	1.50	5.00
95-48-7	o-Cresol		12.5	ug/L	1.50	5.00
88-74-4	2-Nitroaniline *o-Nitroaniline*		20.0	ug/L	1.50	5.00
100-01-6	4-Nitroaniline *p-Nitroaniline*		20.5	ug/L	1.50	5.00

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	40.8	50.0	ug/L	81.5	(33%-126%)
2-Fluorobiphenyl	19.3	25.0	ug/L	77.2	(35%-102%)
2-Fluorophenol	16.6	50.0	ug/L	33.2	(18%-84%)
Nitrobenzene-d5	16.7	25.0	ug/L	66.9	(38%-113%)
Phenol-d5	10.9	50.0	ug/L	21.8	(10%-110%)
p-Terphenyl-d14	23.9	25.0	ug/L	95.5	(38%-123%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378629**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2310.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		34.1	ug/L	3.49	11.6
120-82-1	1,2,4-Trichlorobenzene		31.7	ug/L	3.49	11.6
95-50-1	1,2-Dichlorobenzene		30.1	ug/L	3.49	11.6
122-66-7	Azobenzene		38.1	ug/L	3.49	11.6
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		28.5	ug/L	3.49	11.6
106-46-7	1,4-Dichlorobenzene		29.2	ug/L	3.49	11.6
123-91-1	1,4-Dioxane		27.7	ug/L	3.49	11.6
90-12-0	1-Methylnaphthalene		37.4	ug/L	0.349	1.16
58-90-2	2,3,4,6-Tetrachlorophenol		43.2	ug/L	3.49	11.6
95-95-4	2,4,5-Trichlorophenol		42.7	ug/L	3.49	11.6
88-06-2	2,4,6-Trichlorophenol		40.8	ug/L	3.49	11.6
120-83-2	2,4-Dichlorophenol		36.9	ug/L	3.49	11.6
105-67-9	2,4-Dimethylphenol		34.8	ug/L	3.49	11.6
51-28-5	2,4-Dinitrophenol		46.9	ug/L	5.81	23.3
121-14-2	2,4-Dinitrotoluene		47.8	ug/L	3.49	11.6
606-20-2	2,6-Dinitrotoluene		45.7	ug/L	3.49	11.6
91-58-7	2-Chloronaphthalene		35.8	ug/L	0.477	1.16
95-57-8	2-Chlorophenol		31.9	ug/L	3.49	11.6
534-52-1	2-Methyl-4,6-dinitrophenol		52.9	ug/L	3.49	11.6
91-57-6	2-Methylnaphthalene		33.4	ug/L	0.349	1.16
88-75-5	2-Nitrophenol		38.9	ug/L	3.49	11.6
91-94-1	3,3'-Dichlorobenzidine		41.5	ug/L	3.49	11.6
101-55-3	4-Bromophenylphenylether		43.5	ug/L	3.49	11.6
59-50-7	Parachlorometa cresol		39.1	ug/L	3.49	11.6
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		43.7	ug/L	3.84	11.6
7005-72-3	4-Chlorophenylphenylether		43.7	ug/L	3.49	11.6
100-02-7	4-Nitrophenol		20.5	ug/L	3.49	11.6
83-32-9	Acenaphthene		38.5	ug/L	0.349	1.16
208-96-8	Acenaphthylene		38.5	ug/L	0.349	1.16
62-53-3	Aniline		32.1	ug/L	4.88	11.6
120-12-7	Anthracene		43.0	ug/L	0.349	1.16
1912-24-9	Atrazine		25.7	ug/L	3.49	11.6
92-87-5	Benzidine	J	8.78	ug/L	4.53	11.6
56-55-3	Benzo(a)anthracene		41.2	ug/L	0.349	1.16
50-32-8	Benzo(a)pyrene		43.0	ug/L	0.349	1.16
205-99-2	Benzo(b)fluoranthene		44.7	ug/L	0.349	1.16
191-24-2	Benzo(ghi)perylene		42.0	ug/L	0.349	1.16

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378629**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2310.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		37.9	ug/L	0.349	1.16
65-85-0	Benzoic acid		54.8	ug/L	6.98	23.3
100-51-6	Benzyl alcohol		28.0	ug/L	3.49	11.6
85-68-7	Butylbenzylphthalate		39.6	ug/L	3.49	11.6
218-01-9	Chrysene		43.6	ug/L	0.349	1.16
84-74-2	Di-n-butylphthalate		42.1	ug/L	3.49	11.6
117-84-0	Di-n-octylphthalate		43.3	ug/L	3.49	11.6
53-70-3	Dibenzo(a,h)anthracene		42.1	ug/L	0.349	1.16
132-64-9	Dibenzofuran		39.7	ug/L	3.49	11.6
84-66-2	Diethylphthalate		42.3	ug/L	3.49	11.6
131-11-3	Dimethylphthalate		43.7	ug/L	3.49	11.6
88-85-7	Dinoseb	U	11.6	ug/L	3.49	11.6
122-39-4	Diphenylamine		39.4	ug/L	3.49	11.6
206-44-0	Fluoranthene		41.1	ug/L	0.349	1.16
86-73-7	Fluorene		41.0	ug/L	0.349	1.16
118-74-1	Hexachlorobenzene		41.3	ug/L	3.49	11.6
87-68-3	Hexachlorobutadiene		32.4	ug/L	3.49	11.6
77-47-4	Hexachlorocyclopentadiene		21.2	ug/L	3.49	11.6
67-72-1	Hexachloroethane		27.6	ug/L	3.49	11.6
193-39-5	Indeno(1,2,3-cd)pyrene		44.3	ug/L	0.349	1.16
78-59-1	Isophorone		38.0	ug/L	4.07	11.6
62-75-9	N-Methyl-N-nitrosomethylamine		26.4	ug/L	3.49	11.6
924-16-3	N-Nitrosodi-n-butylamine	U	11.6	ug/L	3.49	11.6
55-18-5	N-Nitrosodiethylamine	U	11.6	ug/L	3.49	11.6
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		33.6	ug/L	3.49	11.6
930-55-2	N-Nitrosopyrrolidine		37.6	ug/L	3.49	11.6
91-20-3	Naphthalene		35.1	ug/L	0.349	1.16
98-95-3	Nitrobenzene		36.9	ug/L	3.49	11.6
608-93-5	Pentachlorobenzene	U	11.6	ug/L	3.49	11.6
87-86-5	Pentachlorophenol		39.1	ug/L	3.49	11.6
85-01-8	Phenanthrene		42.6	ug/L	0.349	1.16
108-95-2	Phenol		18.7	ug/L	3.49	11.6
129-00-0	Pyrene		40.9	ug/L	0.349	1.16
110-86-1	Pyridine		23.4	ug/L	3.49	11.6
108-60-1	bis(2-Chloro-1-methylethyl)ether		32.5	ug/L	3.49	11.6
111-91-1	bis(2-Chloroethoxy)methane		36.9	ug/L	3.49	11.6
111-44-4	bis(2-Chloroethyl) ether		33.1	ug/L	3.49	11.6
117-81-7	bis(2-Ethylhexyl)phthalate		41.6	ug/L	3.49	11.6

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378629**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MS**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:18**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2310.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		31.7	ug/L	4.30	11.6
99-09-2	3-Nitroaniline *m-Nitroaniline*		49.0	ug/L	3.49	11.6
95-48-7	o-Cresol		30.0	ug/L	3.49	11.6
88-74-4	2-Nitroaniline *o-Nitroaniline*		39.6	ug/L	3.49	11.6
100-01-6	4-Nitroaniline *p-Nitroaniline*		45.7	ug/L	3.49	11.6

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	88.8	116	ug/L	76.4	(33%-126%)
2-Fluorobiphenyl	36.0	58.1	ug/L	61.9	(35%-102%)
2-Fluorophenol	43.6	116	ug/L	37.5	(18%-84%)
Nitrobenzene-d5	33.0	58.1	ug/L	56.8	(38%-113%)
Phenol-d5	35.2	116	ug/L	30.3	(10%-110%)
p-Terphenyl-d14	46.5	58.1	ug/L	80	(38%-123%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378630**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:46**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2311.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		49.0	ug/L	3.49	11.6
120-82-1	1,2,4-Trichlorobenzene		44.8	ug/L	3.49	11.6
95-50-1	1,2-Dichlorobenzene		40.9	ug/L	3.49	11.6
122-66-7	Azobenzene		50.5	ug/L	3.49	11.6
	1,2-Diphenylhydrazine					
541-73-1	1,3-Dichlorobenzene		40.6	ug/L	3.49	11.6
106-46-7	1,4-Dichlorobenzene		41.4	ug/L	3.49	11.6
123-91-1	1,4-Dioxane		40.2	ug/L	3.49	11.6
90-12-0	1-Methylnaphthalene		46.5	ug/L	0.349	1.16
58-90-2	2,3,4,6-Tetrachlorophenol		53.7	ug/L	3.49	11.6
95-95-4	2,4,5-Trichlorophenol		55.5	ug/L	3.49	11.6
88-06-2	2,4,6-Trichlorophenol		55.2	ug/L	3.49	11.6
120-83-2	2,4-Dichlorophenol		48.2	ug/L	3.49	11.6
105-67-9	2,4-Dimethylphenol		42.2	ug/L	3.49	11.6
51-28-5	2,4-Dinitrophenol		55.9	ug/L	5.81	23.3
121-14-2	2,4-Dinitrotoluene		57.5	ug/L	3.49	11.6
606-20-2	2,6-Dinitrotoluene		57.2	ug/L	3.49	11.6
91-58-7	2-Chloronaphthalene		49.3	ug/L	0.477	1.16
95-57-8	2-Chlorophenol		42.5	ug/L	3.49	11.6
534-52-1	2-Methyl-4,6-dinitrophenol		65.4	ug/L	3.49	11.6
91-57-6	2-Methylnaphthalene		42.6	ug/L	0.349	1.16
88-75-5	2-Nitrophenol		53.0	ug/L	3.49	11.6
91-94-1	3,3'-Dichlorobenzidine		61.3	ug/L	3.49	11.6
101-55-3	4-Bromophenylphenylether		57.1	ug/L	3.49	11.6
59-50-7	Parachlorometa cresol		46.4	ug/L	3.49	11.6
	4-Chloro-3-methylphenol					
106-47-8	4-Chloroaniline		56.2	ug/L	3.84	11.6
7005-72-3	4-Chlorophenylphenylether		55.3	ug/L	3.49	11.6
100-02-7	4-Nitrophenol		24.5	ug/L	3.49	11.6
83-32-9	Acenaphthene		51.4	ug/L	0.349	1.16
208-96-8	Acenaphthylene		51.2	ug/L	0.349	1.16
62-53-3	Aniline		43.1	ug/L	4.88	11.6
120-12-7	Anthracene		56.7	ug/L	0.349	1.16
1912-24-9	Atrazine		31.3	ug/L	3.49	11.6
92-87-5	Benzidine		31.6	ug/L	4.53	11.6
56-55-3	Benzo(a)anthracene		53.4	ug/L	0.349	1.16
50-32-8	Benzo(a)pyrene		56.1	ug/L	0.349	1.16
205-99-2	Benzo(b)fluoranthene		54.8	ug/L	0.349	1.16
191-24-2	Benzo(ghi)perylene		67.0	ug/L	0.349	1.16

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378630**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:46**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2311.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		46.7	ug/L	0.349	1.16
65-85-0	Benzoic acid		63.7	ug/L	6.98	23.3
100-51-6	Benzyl alcohol		36.2	ug/L	3.49	11.6
85-68-7	Butylbenzylphthalate		46.2	ug/L	3.49	11.6
218-01-9	Chrysene		57.1	ug/L	0.349	1.16
84-74-2	Di-n-butylphthalate		52.1	ug/L	3.49	11.6
117-84-0	Di-n-octylphthalate		56.0	ug/L	3.49	11.6
53-70-3	Dibenzo(a,h)anthracene		69.9	ug/L	0.349	1.16
132-64-9	Dibenzofuran		51.1	ug/L	3.49	11.6
84-66-2	Diethylphthalate		50.4	ug/L	3.49	11.6
131-11-3	Dimethylphthalate		54.2	ug/L	3.49	11.6
88-85-7	Dinoseb	U	11.6	ug/L	3.49	11.6
122-39-4	Diphenylamine		54.1	ug/L	3.49	11.6
206-44-0	Fluoranthene		54.5	ug/L	0.349	1.16
86-73-7	Fluorene		52.2	ug/L	0.349	1.16
118-74-1	Hexachlorobenzene		55.3	ug/L	3.49	11.6
87-68-3	Hexachlorobutadiene		47.1	ug/L	3.49	11.6
77-47-4	Hexachlorocyclopentadiene		32.8	ug/L	3.49	11.6
67-72-1	Hexachloroethane		39.0	ug/L	3.49	11.6
193-39-5	Indeno(1,2,3-cd)pyrene		68.0	ug/L	0.349	1.16
78-59-1	Isophorone		47.3	ug/L	4.07	11.6
62-75-9	N-Methyl-N-nitrosomethylamine		37.7	ug/L	3.49	11.6
924-16-3	N-Nitrosodi-n-butylamine	U	11.6	ug/L	3.49	11.6
55-18-5	N-Nitrosodiethylamine	U	11.6	ug/L	3.49	11.6
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		40.0	ug/L	3.49	11.6
930-55-2	N-Nitrosopyrrolidine		43.5	ug/L	3.49	11.6
91-20-3	Naphthalene		47.7	ug/L	0.349	1.16
98-95-3	Nitrobenzene		50.6	ug/L	3.49	11.6
608-93-5	Pentachlorobenzene	U	11.6	ug/L	3.49	11.6
87-86-5	Pentachlorophenol		50.2	ug/L	3.49	11.6
85-01-8	Phenanthrene		56.6	ug/L	0.349	1.16
108-95-2	Phenol		24.6	ug/L	3.49	11.6
129-00-0	Pyrene		49.5	ug/L	0.349	1.16
110-86-1	Pyridine		34.3	ug/L	3.49	11.6
108-60-1	bis(2-Chloro-1-methylethyl)ether		41.0	ug/L	3.49	11.6
111-91-1	bis(2-Chloroethoxy)methane		47.4	ug/L	3.49	11.6
111-44-4	bis(2-Chloroethyl) ether		43.0	ug/L	3.49	11.6
117-81-7	bis(2-Ethylhexyl)phthalate		50.2	ug/L	3.49	11.6

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378630**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1502076**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MSD**	**Method:**	**SW846 3510C/8270D**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502077**	**Inst:**	**MSD4.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:46**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**430 mL**	**Final Volume:**	**.5 mL**
Data File:	**s082315.B\s4h2311.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		39.9	ug/L	4.30	11.6
99-09-2	3-Nitroaniline *m-Nitroaniline*		61.2	ug/L	3.49	11.6
95-48-7	o-Cresol		38.1	ug/L	3.49	11.6
88-74-4	2-Nitroaniline *o-Nitroaniline*		51.2	ug/L	3.49	11.6
100-01-6	4-Nitroaniline *p-Nitroaniline*		55.2	ug/L	3.49	11.6

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	104	116	ug/L	89.5	(33%-126%)
2-Fluorobiphenyl	47.9	58.1	ug/L	82.3	(35%-102%)
2-Fluorophenol	59.8	116	ug/L	51.4	(18%-84%)
Nitrobenzene-d5	44.0	58.1	ug/L	75.7	(38%-113%)
Phenol-d5	45.3	116	ug/L	39	(10%-110%)
p-Terphenyl-d14	53.5	58.1	ug/L	92	(38%-123%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378631**				
Client Sample:	**QC for batch 1502079**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502079**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 14:50**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2410.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene	U	0.100	ug/L	0.030	0.100
91-58-7	2-Chloronaphthalene	U	0.100	ug/L	0.030	0.100
91-57-6	2-Methylnaphthalene	U	0.100	ug/L	0.030	0.100
91-94-1	3,3'-Dichlorobenzidine	U	0.100	ug/L	0.039	0.100
83-32-9	Acenaphthene	U	0.100	ug/L	0.030	0.100
208-96-8	Acenaphthylene	U	0.100	ug/L	0.030	0.100
120-12-7	Anthracene	U	0.100	ug/L	0.030	0.100
92-87-5	Benzidine	U	2.50	ug/L	0.830	2.50
56-55-3	Benzo(a)anthracene	U	0.100	ug/L	0.030	0.100
50-32-8	Benzo(a)pyrene	U	0.100	ug/L	0.030	0.100
205-99-2	Benzo(b)fluoranthene	U	0.100	ug/L	0.030	0.100
191-24-2	Benzo(ghi)perylene	U	0.100	ug/L	0.030	0.100
207-08-9	Benzo(k)fluoranthene	U	0.100	ug/L	0.030	0.100
218-01-9	Chrysene	U	0.100	ug/L	0.030	0.100
53-70-3	Dibenzo(a,h)anthracene	U	0.100	ug/L	0.030	0.100
206-44-0	Fluoranthene	U	0.100	ug/L	0.030	0.100
86-73-7	Fluorene	U	0.100	ug/L	0.030	0.100
193-39-5	Indeno(1,2,3-cd)pyrene	U	0.100	ug/L	0.030	0.100
62-75-9	N-Methyl-N-nitrosomethylamine	U	0.200	ug/L	0.070	0.200
924-16-3	N-Nitrosodi-n-butylamine	U	0.100	ug/L	0.030	0.100
55-18-5	N-Nitrosodiethylamine	U	0.100	ug/L	0.030	0.100
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*	U	0.100	ug/L	0.030	0.100
930-55-2	N-Nitrosopyrrolidine	U	0.100	ug/L	0.030	0.100
91-20-3	Naphthalene	U	0.100	ug/L	0.030	0.100
85-01-8	Phenanthrene	U	0.100	ug/L	0.030	0.100
129-00-0	Pyrene	U	0.100	ug/L	0.030	0.100
111-44-4	bis(2-Chloroethyl) ether	U	0.100	ug/L	0.030	0.100

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
5-alpha-Androstane	5.00	5.00	ug/L	81	(35%-112%)

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:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378632**				
Client Sample:	**QC for batch 1502079**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502079DL**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**2**
Run Date:	**08/24/2015 15:19**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2411.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
91-94-1	3,3'-Dichlorobenzidine		24.3	ug/L	0.078	0.200

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378632**				
Client Sample:	**QC for batch 1502079**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502079**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 15:49**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**1000 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2412.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		4.04	ug/L	0.030	0.100
91-58-7	2-Chloronaphthalene		3.73	ug/L	0.030	0.100
91-57-6	2-Methylnaphthalene		4.08	ug/L	0.030	0.100
83-32-9	Acenaphthene		3.93	ug/L	0.030	0.100
208-96-8	Acenaphthylene		4.20	ug/L	0.030	0.100
120-12-7	Anthracene		4.50	ug/L	0.030	0.100
92-87-5	Benzidine		6.61	ug/L	0.830	2.50
56-55-3	Benzo(a)anthracene		4.39	ug/L	0.030	0.100
50-32-8	Benzo(a)pyrene		4.52	ug/L	0.030	0.100
205-99-2	Benzo(b)fluoranthene		4.44	ug/L	0.030	0.100
191-24-2	Benzo(ghi)perylene		4.37	ug/L	0.030	0.100
207-08-9	Benzo(k)fluoranthene		4.58	ug/L	0.030	0.100
218-01-9	Chrysene		4.31	ug/L	0.030	0.100
53-70-3	Dibenzo(a,h)anthracene		4.64	ug/L	0.030	0.100
206-44-0	Fluoranthene		4.61	ug/L	0.030	0.100
86-73-7	Fluorene		4.52	ug/L	0.030	0.100
193-39-5	Indeno(1,2,3-cd)pyrene		4.42	ug/L	0.030	0.100
62-75-9	N-Methyl-N-nitrosomethylamine		1.46	ug/L	0.070	0.200
924-16-3	N-Nitrosodi-n-butylamine		4.03	ug/L	0.030	0.100
55-18-5	N-Nitrosodiethylamine		3.66	ug/L	0.030	0.100
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		3.89	ug/L	0.030	0.100
930-55-2	N-Nitrosopyrrolidine		3.29	ug/L	0.030	0.100
91-20-3	Naphthalene		3.79	ug/L	0.030	0.100
85-01-8	Phenanthrene		4.09	ug/L	0.030	0.100
129-00-0	Pyrene		3.64	ug/L	0.030	0.100
111-44-4	bis(2-Chloroethyl) ether		3.59	ug/L	0.030	0.100

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
5-alpha-Androstane	5.00	5.00	ug/L	79	(35%-112%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**1203378633**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**QC for batch 1502079**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102578MS**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 16:48**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**465 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2414.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		8.73	ug/L	0.0645	0.215
91-58-7	2-Chloronaphthalene		7.46	ug/L	0.0645	0.215
91-57-6	2-Methylnaphthalene		8.60	ug/L	0.0645	0.215
91-94-1	3,3'-Dichlorobenzidine	E	52.6	ug/L	0.0839	0.215
83-32-9	Acenaphthene		8.19	ug/L	0.0645	0.215
208-96-8	Acenaphthylene		8.56	ug/L	0.0645	0.215
120-12-7	Anthracene		9.38	ug/L	0.0645	0.215
92-87-5	Benzidine		9.31	ug/L	1.78	5.38
56-55-3	Benzo(a)anthracene		8.71	ug/L	0.0645	0.215
50-32-8	Benzo(a)pyrene		5.91	ug/L	0.0645	0.215
205-99-2	Benzo(b)fluoranthene		6.28	ug/L	0.0645	0.215
191-24-2	Benzo(ghi)perylene		3.98	ug/L	0.0645	0.215
207-08-9	Benzo(k)fluoranthene		5.53	ug/L	0.0645	0.215
218-01-9	Chrysene		8.26	ug/L	0.0645	0.215
53-70-3	Dibenzo(a,h)anthracene		3.74	ug/L	0.0645	0.215
206-44-0	Fluoranthene		9.12	ug/L	0.0645	0.215
86-73-7	Fluorene		9.23	ug/L	0.0645	0.215
193-39-5	Indeno(1,2,3-cd)pyrene		4.24	ug/L	0.0645	0.215
62-75-9	N-Methyl-N-nitrosomethylamine		5.12	ug/L	0.151	0.430
924-16-3	N-Nitrosodi-n-butylamine		8.99	ug/L	0.0645	0.215
55-18-5	N-Nitrosodiethylamine		8.28	ug/L	0.0645	0.215
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		8.80	ug/L	0.0645	0.215
930-55-2	N-Nitrosopyrrolidine		8.62	ug/L	0.0645	0.215
91-20-3	Naphthalene		8.02	ug/L	0.0645	0.215
85-01-8	Phenanthrene		8.77	ug/L	0.0645	0.215
129-00-0	Pyrene		8.15	ug/L	0.0645	0.215
111-44-4	bis(2-Chloroethyl) ether		7.83	ug/L	0.0645	0.215

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
5-alpha-Androstane	10.8	10.8	ug/L	18	*	(35%-112%)

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**1203378634**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**QC for batch 1502079**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102578MSD**	**Method:**	**SW846 3510C/8270D SIM**	**SOP Ref:**	**GL-OA-E-009**
Batch ID:	**1502080**	**Inst:**	**MSD2.I**	**Dilution:**	**1**
Run Date:	**08/24/2015 17:17**	**Analyst:**	**JMB3**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:20**	**Aliquot:**	**465 mL**	**Final Volume:**	**1 mL**
Data File:	**s082415.B\s2h2415.D**	**Column:**	**DB-5ms**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
90-12-0	1-Methylnaphthalene		8.80	ug/L	0.0645	0.215
91-58-7	2-Chloronaphthalene		7.87	ug/L	0.0645	0.215
91-57-6	2-Methylnaphthalene		8.77	ug/L	0.0645	0.215
91-94-1	3,3'-Dichlorobenzidine	E	51.1	ug/L	0.0839	0.215
83-32-9	Acenaphthene		8.41	ug/L	0.0645	0.215
208-96-8	Acenaphthylene		8.90	ug/L	0.0645	0.215
120-12-7	Anthracene		9.63	ug/L	0.0645	0.215
92-87-5	Benzidine		8.99	ug/L	1.78	5.38
56-55-3	Benzo(a)anthracene		9.31	ug/L	0.0645	0.215
50-32-8	Benzo(a)pyrene		6.84	ug/L	0.0645	0.215
205-99-2	Benzo(b)fluoranthene		7.05	ug/L	0.0645	0.215
191-24-2	Benzo(ghi)perylene		4.80	ug/L	0.0645	0.215
207-08-9	Benzo(k)fluoranthene		6.54	ug/L	0.0645	0.215
218-01-9	Chrysene		8.92	ug/L	0.0645	0.215
53-70-3	Dibenzo(a,h)anthracene		4.43	ug/L	0.0645	0.215
206-44-0	Fluoranthene		8.99	ug/L	0.0645	0.215
86-73-7	Fluorene		9.42	ug/L	0.0645	0.215
193-39-5	Indeno(1,2,3-cd)pyrene		4.88	ug/L	0.0645	0.215
62-75-9	N-Methyl-N-nitrosomethylamine		5.27	ug/L	0.151	0.430
924-16-3	N-Nitrosodi-n-butylamine		9.08	ug/L	0.0645	0.215
55-18-5	N-Nitrosodiethylamine		8.17	ug/L	0.0645	0.215
621-64-7	N-Nitrosodi--n-propylamine *N-Nitrosodipropylamine*		8.73	ug/L	0.0645	0.215
930-55-2	N-Nitrosopyrrolidine		8.69	ug/L	0.0645	0.215
91-20-3	Naphthalene		8.19	ug/L	0.0645	0.215
85-01-8	Phenanthrene		9.01	ug/L	0.0645	0.215
129-00-0	Pyrene		9.63	ug/L	0.0645	0.215
111-44-4	bis(2-Chloroethyl) ether		7.87	ug/L	0.0645	0.215

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
5-alpha-Androstane	10.8	10.8	ug/L	21	*	(35%-112%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
24-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
SEMIVOA GC/MS	SW846 3510C/8270D	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1502077	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379641(2015-2192)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed RPD for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed RPD for MS/MSD, or PS/PSD: QC 1203378630MSD 2. Failed Recovery for MS/MSD, or PS/PSD: QC 1203378629MS	1. The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data. 1203378629MS and 1203378630MSD (CASA-15-102634) Several [See applicable report]. The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits for Benzidine. Due to the large difference between the individual recoveries in each MS and MSD analyte pair, the failure may be attributed to an error in the extraction process. 1203378629MS and 1203378630MSD (CASA-15-102634) Benzidine [113* (0%-30%)]. 2. The MS or MSD (See Below) recoveries were not within the acceptance limits. The associated MS or MSD passed recoveries, as did the LCS. It appears that the low spike recoveries were isolated to the MS or MSD only and were the result of a poor extraction. 1203378629 (CASA-15-102634MS) Benzidine [7.55* (10%-127%)].

Originator's Name:

Josh Brooks 24-AUG-15

Data Validator/Group Leader:

Barbara Bailey 10-SEP-15

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
27-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
SEMIVOA GC/MS	SW846 3510C/8270D SIM	Liquid	ARSL (ESHL)
Batch ID:	**Sample Numbers:**		
1502080	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379641(2015-2192)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Failed Recovery for LCS/LCSD

Failed Yield for Surrogates

Specification and Requirements Exception Description:	DER Disposition:
1. Samples 379487004, 379641002 and 379641008 and QC samples 1203378633MS and 1203378634MSD failed surrogate recovery.	1. Samples (See Below) displayed surrogate recovery failures. Since the parent sample and associated MS/MSD pair displayed similar recoveries, the failures were attributed to matrix interference and the data results are reported. 1203378633 (CAMO-15-102578MS) 5-alpha-Androstane [18* (35%-112%)]. 1203378634 (CAMO-15-102578MSD) 5-alpha-Androstane [21* (35%-112%)]. 379487004 (CAMO-15-102578) 5-alpha-Androstane [27* (35%-112%)]. Samples (See Below) failed surrogate recovery. The surrogate failures were confirmed by re-extraction and analysis (Batch 1502603). The original extraction results have been reported. 379641002 (CASA-15-102634) 5-alpha-Androstane [34* (35%-112%)]. 379641008 (CASA-15-102635) 5-alpha-Androstane [33* (35%-112%)].
2. The 1203378632LCS failed spike recovery.	2. The LCS (See Below) did not meet spike recovery acceptance criteria. The failure is known to be a poor responding analyte as stated per the Method. This may account for the low recovery and the data were reported. 1203378632 (LCS) Benzidine [26* (50%-130%)].
3. The 1203378633MS and 1203378634MSD failed spike recovery.	3. The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. As similar recoveries were displayed in the MS and MSD, the failures were attributed to sample matrix interference and the data were reported. 1203378633 (CAMO-15-102578MS) Benzidine [17* (40%-130%)] and Benzo(ghi)perylene [37* (39%-124%)]. 1203378634 (CAMO-15-102578MSD) Benzidine [17* (40%-130%)].

Originator's Name:

Anne Salter 27-AUG-15

Data Validator/Group Leader:

Herbert Maier 28-AUG-15

Perchlorates by LCMSMS Analysis

Case Narrative

Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

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:	1502487
Prep Batch Number:	1502486

Sample Analysis

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203379720	Interference Check Sample (ICS)
1203379716	Method Blank (MB)
1203379717	Laboratory Control Sample (LCS)
1203379718	379726005(CAMO-15-102600) Matrix Spike (MS)
1203379719	379726005(CAMO-15-102600) 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# 12.

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 379726005 (CAMO-15-102600) 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 379487002 (CAMO-15-102596) was diluted to bring the over range concentration within the calibration range.

Sample Re-extraction/Re-analysis
All samples in this batch were re-analyzed the following day. The initial calibration did not meet all acceptance criteria. However, review of the data provided information for dilutions needed for many samples in this batch.

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
Manual integrations were not required for any data file associated with this SDG.

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 a Micromass Quattro Ultima Mass Spectrometer/Mass Spectrometer. It is designated as LCMSMS #2.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

The LC-MS/MS Perchlorate analysis was performed on a Quatro Ultima LC/MS/MS.

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: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

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

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

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

Date: 06 SEP 2015 **Title: Group Leader**

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-15-102596

Date Received: 18-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 379487002

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	5	20	97.0	ug/L		100	27-AUG-15 14:20	per0827033a
	Perchlorate Isotope Ratio			3.06			100	27-AUG-15 14:20	per0827033a
14797-73-0	Perchlorate-101	5	20	98.4	ug/L		100	27-AUG-15 14:20	per0827033a
	Perchlorate-O(18)			53.2	ug/L		100	27-AUG-15 14:20	per0827033a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-15-102602

Date Received: 18-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 379487007

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.387	ug/L		1	27-AUG-15 14:30	per0827034a
	Perchlorate Isotope Ratio			3.12			1	27-AUG-15 14:30	per0827034a
14797-73-0	Perchlorate-101	.05	.2	0.385	ug/L		1	27-AUG-15 14:30	per0827034a
	Perchlorate-O(18)			0.540	ug/L		1	27-AUG-15 14:30	per0827034a

^ 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): 2015-2166

Extract Batch Code: 1502486

Date Filtered: 26-AUG-15

Matrix: WATER

Sample ID: 1203379717

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.209	ug/L	104		85 - 115
Perchlorate Isotope Ratio		3.08				-
Perchlorate-101	0.200	.21	ug/L	105		85 - 115
Perchlorate-O(18)		.523	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): 2015-2166

Extract Batch Code: 1502486

Date Extracted: 26-AUG-15

GEL MS/PS ID: 1203379718

Client ID: CAMO-15-102600

GEL MSD/PSD ID: 1203379719

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	0.450	ug/L	0.655	102	.656	103	0	30	75 - 125
Perchlorate Isotope Ratio	0	3.07		3.08		3.12		1		-
Perchlorate-101	0.200	0.456	ug/L	0.659	102	.652	98	1	30	75 - 125
Perchlorate-O(18)	0	0.511	ug/L	0.526		.514		2		-

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

Quality Control Data

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
MB

Date Received: 26-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 1203379716

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	27-AUG-15 12:08	per0827019a
	Perchlorate Isotope Ratio						1	27-AUG-15 12:08	per0827019a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	27-AUG-15 12:08	per0827019a
	Perchlorate-O(18)			0.493	ug/L		1	27-AUG-15 12:08	per0827019a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: EPA 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
LCS

Date Received: 26-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 1203379717

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.209	ug/L		1	27-AUG-15 12:17	per0827020a
	Perchlorate Isotope Ratio			3.08			1	27-AUG-15 12:17	per0827020a
14797-73-0	Perchlorate-101	.05	.2	0.210	ug/L		1	27-AUG-15 12:17	per0827020a
	Perchlorate-O(18)			0.523	ug/L		1	27-AUG-15 12:17	per0827020a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: STORM WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
ICS

Date Received:

GEL Job No (SDG): 2015-2166

GEL Sample ID: 1203379720

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.234	ug/L		1	27-AUG-15 12:27	per0827021a
	Perchlorate Isotope Ratio			3.15			1	27-AUG-15 12:27	per0827021a
14797-73-0	Perchlorate-101	.05	.2	0.230	ug/L		1	27-AUG-15 12:27	per0827021a
	Perchlorate-O(18)			0.551	ug/L		1	27-AUG-15 12:27	per0827021a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-15-102600MS

Date Received: 21-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 1203379718

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.655	ug/L		1	27-AUG-15 15:55	per0827043a
	Perchlorate Isotope Ratio			3.08			1	27-AUG-15 15:55	per0827043a
14797-73-0	Perchlorate-101	.05	.2	0.659	ug/L		1	27-AUG-15 15:55	per0827043a
	Perchlorate-O(18)			0.526	ug/L		1	27-AUG-15 15:55	per0827043a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Lab Code: GEL

Instrument: LCMSMS

Method: SW846 6850 Modified

Matrix: WATER

Extraction Batch ID: 1502486

Extraction Type: Filter/DAI

Sample Volume/Weight: 10.0 mL

Concentrated Extract Volume: 10.0

Client Sample No.
CAMO-15-102600MSD

Date Received: 21-AUG-15

GEL Job No (SDG): 2015-2166

GEL Sample ID: 1203379719

Date Filtered: 26-AUG-15

Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.656	ug/L		1	27-AUG-15 16:05	per0827044a
	Perchlorate Isotope Ratio			3.12			1	27-AUG-15 16:05	per0827044a
14797-73-0	Perchlorate-101	.05	.2	0.652	ug/L		1	27-AUG-15 16:05	per0827044a
	Perchlorate-O(18)			0.514	ug/L		1	27-AUG-15 16:05	per0827044a

^ 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

GC Semivolatile Pesticide
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Method/Analysis Information

Procedure:	**Analysis of 1,2-Dibromoethane (EDB), 1,2-Dibromo-3-Chloropropane (DBCP) and 1,2,3- Trichloropropane in Water by GC/ECD Using Methods 504.1 or 8011**
Analytical Method:	SW846 8011
Prep Method:	SW846 8011 PREP
Analytical Batch Number:	1501417
Prep Batch Number:	1501416

Sample Analysis

Sample ID	Client ID
379487003	CAMO-15-102578
379487008	CAMO-15-102566
1203376910	Method Blank (MB)
1203376911	Laboratory Control Sample (LCS)
1203376912	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# 14.

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/LCSD) Recovery
The laboratory control sample (LCS/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.

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
All samples in this batch met preservation and integrity requirements.

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 report (DER) is generated to document procedural anomalies that may deviate from referenced

SOP or contractual documents. A DER was not required for the samples in this batch for this SDG. 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 if applicable.

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

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

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

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
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)

Method/Analysis Information

Procedure:	**Organochlorine Pesticides and Chlorinated Hydrocarbons**
Analytical Method:	SW846 3535A/8081B
Prep Method:	SW846 3535A
Analytical Batch Number:	1501983
Prep Batch Number:	1501978

Sample Analysis

Sample ID	Client ID
379487005	CAMO-15-102578

1203378387	Method Blank (MB)
1203378388	Laboratory Control Sample (LCS)
1203378391	Laboratory Control Sample Duplicate (LCSD)
1203378389	379641003(CASA-15-102634) Matrix Spike (MS)

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

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-041 REV# 13.

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

Calibration Information

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

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

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

Quality Control (QC) Information

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

Surrogate Recoveries
Sample (See Below) failed to meet acceptance criteria for surrogate recovery and was re-extracted out of holding. The re-extracted sample met surrogate recovery acceptance criteria. Both sets of the data were reported.

Sample	Analyte	Value
379487005 (CAMO-15-102578)	Decachlorobiphenyl	31* (36%-128%)
	Decachlorobiphenyl	32.1* (36%-128%)

Laboratory Control Sample (LCS/LCSD) Recovery
The laboratory control sample (LCS/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
ARSL sample 379641003 (CASA-15-102634) of similar matrix was selected for the matrix spike analysis.

Matrix Spike (MS/MSD) Recovery Statement
The MS recoveries 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
Sample 379487005 (CAMO-15-102578) was extracted and analyzed twice due to low surrogate recovery in the first analysis. Both analyses were reported.

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

Miscellaneous Information:

Electronic Package Comment

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

Data Exception (DER) Documentation
Data exception report (DER) 1441816 was generated for sample 379487005 (CAMO-15-102578) in this SDG/batch.

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 if applicable.

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

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

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

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)

Method/Analysis Information

Procedure:	**Organochlorine Pesticides and Chlorinated Hydrocarbons**
Analytical Method:	SW846 3535A/8081B
Prep Method:	SW846 3535A
Analytical Batch Number:	1502971
Prep Batch Number:	1502970

Sample Analysis

Sample ID	Client ID
379487005	CAMO-15-102578
1203381192	Method Blank (MB)
1203381193	Laboratory Control Sample (LCS)
1203381196	Laboratory Control Sample Duplicate (LCSD)
1203381194	379866004(CAMO-15-102570) Matrix Spike (MS)

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

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-041 REV# 13.

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

Calibration Information

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

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

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

Quality Control (QC) Information

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

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

Laboratory Control Sample (LCS/LCSD) Recovery
The laboratory control sample (LCS/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
ARSL sample 379866004 (CAMO-15-102570) of similar matrix was selected for the matrix spike analysis.

Matrix Spike (MS/MSD) Recovery Statement
The MS recoveries 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. Sample 379487005 (CAMO-15-102578) was re-extracted out of holding.

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
Sample 379487005 (CAMO-15-102578) was extracted and analyzed twice due to low surrogate recovery in the first analysis. Both sets of the data were reported.

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

Miscellaneous Information:

Electronic Package Comment

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

Data Exception (DER) Documentation
Data exception report (DER) 1443674 was generated for sample 379487005 (CAMO-15-102578) in this SDG/batch.

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 if applicable.

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

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

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

The container scanning event for custody was missed for sample 379487005 (CAMO-15-102578). The analyst did not scan sample into his/her custody. The analyst had physical custody of the sample during the analysis.

System Configuration

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2015-2166 GEL Work Order: 379487

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: Jimi Cao **Name: Jimin Cao**

Date: 09 SEP 2015 **Title: Data Validator**

Sample Data Summary

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487003**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8011**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1501417**	**Inst:**	**ECD6A.I**	**Dilution:**	**1**
Run Date:	**08/20/2015 13:55**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/20/2015 12:20**	**Aliquot:**	**34.19 mL**	**Final Volume:**	**35 mL**
Data File:	**082015\E6H2009.D**	**Column:**	**1 RTX-CLP**		
	082015\E6H2009.D		**2 RTX-CLPII**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-18-4	1,2,3-Trichloropropane	U	0.0512	ug/L	0.0195	0.0512	1
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0205	ug/L	0.00921	0.0205	1
106-93-4	1,2-Dibromoethane	U	0.0205	ug/L	0.00921	0.0205	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	6.39	7.31	ug/L	87.4	(50%-150%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487005**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**HCB**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578RE**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1502971**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**08/27/2015 22:42**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/26/2015 18:50**	**Aliquot:**	**950 mL**	**Final Volume:**	**5 mL**
Data File:	**082715.S\e5H2734.D**	**Column:**	**1 Rtx-CLPesticides**		
	082715.S\e5H2734.D		**2 Rtx-CLPesticides2**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.676	1.05	ug/L	64	(32%-111%)
Decachlorobiphenyl	0.698	1.05	ug/L	66	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487005**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**HCB**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1501983**	**Inst:**	**ECD7A.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:32**	**Analyst:**	**LOF**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 10:32**	**Aliquot:**	**950 mL**	**Final Volume:**	**5 mL**
Data File:	**082315.B\e7h2311.D**	**Column:**	**1 CLPesticides**		
	082315.B\e7h2311.D		**2 CLPesticides2**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%		Acceptable Limits
4cmx	0.375	1.05	ug/L	35.6		(32%-111%)
Decachlorobiphenyl	0.326	1.05	ug/L	31	*	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487008**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**8011**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102566**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1501417**	**Inst:**	**ECD6A.I**	**Dilution:**	**1**
Run Date:	**08/20/2015 14:21**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/20/2015 12:20**	**Aliquot:**	**34.46 mL**	**Final Volume:**	**35 mL**
Data File:	**082015\E6H2010.D**	**Column:**	**1 RTX-CLP**		
	082015\E6H2010.D		**2 RTX-CLPII**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-18-4	1,2,3-Trichloropropane	U	0.0508	ug/L	0.0193	0.0508	1
96-12-8	1,2-Dibromo-3-chloropropane	U	0.0203	ug/L	0.00914	0.0203	1
106-93-4	1,2-Dibromoethane	U	0.0203	ug/L	0.00914	0.0203	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	6.37	7.25	ug/L	87.8	(50%-150%)

Quality Control Summary

Pesticide

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	1-Chlor1 %REC #	1-Chlor2 %REC #
1203376910	MB for batch 1501416	108	96
1203376911	LCS for batch 1501416	100	90
1203376912	LCSD for batch 1501416	103	89
379487003	CAMO-15-102578	87	75
379487008	CAMO-15-102566	88	77

Surrogate	Acceptance Limits
1-Chloro = 1-Chloro-2-fluorobenzene	(50%-150%)

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

Pesticide

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	4CMX 1 %REC #	4CMX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #
1203378387	MB for batch 1501978	72	73	73	72
1203378388	LCS for batch 1501978	78	80	77	77
1203378391	LCSD for batch 1501978	82	83	78	77
379487005	CAMO-15-102578	36	36	32 *	31 *
1203378389	CASA-15-102634MS	73	74	79	80
1203381192	MB for batch 1502970	70	68	78	73
1203381193	LCS for batch 1502970	69	65	76	71
1203381196	LCSD for batch 1502970	71	68	78	72
379487005	CAMO-15-102578RE	68	64	71	66
1203381194	CAMO-15-102570MS	70	68	65	61

Surrogate		Acceptance Limits
4CMX	= 4cmx	(32%-111%)
DCB	= Decachlorobiphenyl	(36%-128%)

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

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501416**
Lab Sample ID **1203376911**
Instrument: **ECD6A.I**
Analyst: **MYA1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/20/2015 13:05**
Prep Batch ID: **1501416**
Batch ID: **1501417**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-93-4	LCS	1,2-Dibromoethane	0.200	0.0	0.206	103	70-130
96-18-4	LCS	1,2,3-Trichloropropane	0.500	0.0	0.539	108	70-130
96-12-8	LCS	1,2-Dibromo-3-chloropropane	0.200	0.0	0.205	103	70-130

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCSD for batch 1501416**
Lab Sample ID **1203376912**
Instrument: **ECD6A.I**
Analyst: **MYA1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **08/20/2015 13:30**
Dilution: 1
Prep Batch ID: **1501416**
Batch ID: **1501417**

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	0.205	103	70-130	0	0-20
96-18-4	LCSD 1,2,3-Trichloropropane	0.500	0.0	0.543	109	70-130	1	0-20
96-12-8	LCSD 1,2-Dibromo-3-chloropropane	0.200	0.0	0.208	104	70-130	1	0-20

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501978**
Lab Sample ID **1203378388**
Instrument: **ECD7A.I**
Analyst: **LOF**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/23/2015 16:00**
Dilution: 1
Prep Batch ID: **1501978**
Batch ID: **1501983**

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	0.079	79	45-121

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCSD for batch 1501978**
Lab Sample ID **1203378391**
Instrument: **ECD7A.I**
Analyst: **LOF**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **08/23/2015 16:16**
Dilution: 1
Prep Batch ID: **1501978**
Batch ID: **1501983**

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	0.0824	82	45-121	4	0-30

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378389**
Instrument: **ECD7A.I**
Analyst: **LOF**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/23/2015 17:04**
Prep Batch ID: **1501978**
Batch ID: **1501983**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS	Hexachlorobenzene	0.105	0.00	U	0.0748	71	43-118

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1502970**
Lab Sample ID **1203381193**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/27/2015 22:11**
Dilution: 1
Prep Batch ID: **1502970**
Batch ID: **1502971**

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	0.0661	66	45-121

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCSD for batch 1502970**
Lab Sample ID **1203381196**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **08/27/2015 22:26**
Dilution: 1
Prep Batch ID: **1502970**
Batch ID: **1502971**

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	0.0673	67	45-121	2	0-30

Pesticide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CAMO-15-102570MS**
Lab Sample ID **1203381194**
Instrument: **ECD5A.I**
Analyst: **RXE1**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/27/2015 23:42**
Prep Batch ID: **1502970**
Batch ID: **1502971**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
118-74-1	MS	Hexachlorobenzene	0.109	0.00	U	0.0776	71	43-118

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1501416**	**Instrument ID:**	**ECD6A.I_1** **ECD6A.I_2**	**Data File:**	**082015\E6H2006.D** **082015\E6H2006.D**
Lab Sample ID:	**1203376910**				
Column:	**RTX-CLP** **RTX-CLPII**	**Prep Date:**	**08/20/2015 12:20**	**Analyzed:**	**08/20/15 12:39**

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 1501416	**1203376911**	**082015\E6H2007.D**	**08/20/15**	**1305**
02 LCSD for batch 1501416	**1203376912**	**082015\E6H2008.D**	**08/20/15**	**1330**
03 CAMO-15-102578	**379487003**	**082015\E6H2009.D**	**08/20/15**	**1355**
04 CAMO-15-102566	**379487008**	**082015\E6H2010.D**	**08/20/15**	**1421**

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1501978**	**Instrument ID:**	**ECD7A.I_1** **ECD7A.I_2**	**Data File:**	**082315.B\e7h2308.D** **082315.B\e7h2308.D**
Lab Sample ID:	**1203378387**				
Column:	**CLPesticides** **CLPesticides2**	**Prep Date:**	**08/21/2015 10:32**	**Analyzed:**	**08/23/15 15:44**

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 1501978	**1203378388**	**082315.B\e7h2309.D** **082315.B\e7h2309.D**	**08/23/15**	**1600**
02 LCSD for batch 1501978	**1203378391**	**082315.B\e7h2310.D** **082315.B\e7h2310.D**	**08/23/15**	**1616**
03 CAMO-15-102578	**379487005**	**082315.B\e7h2311.D** **082315.B\e7h2311.D**	**08/23/15**	**1632**
04 CASA-15-102634MS	**1203378389**	**082315.B\e7h2313.D** **082315.B\e7h2313.D**	**08/23/15**	**1704**

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1502970**	**Instrument ID:**	**ECD5A.I_1** **ECD5A.I_2**	**Data File:**	**082715.S\e5H2731.D** **082715.S\e5H2731.D**
Lab Sample ID:	**1203381192**				
Column:	**Rtx-CLPesticides** **Rtx-CLPesticides2**	**Prep Date:**	**08/26/2015 18:50**	**Analyzed:**	**08/27/15 21:56**

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 1502970	1203381193	082715.S\e5H2732.D	08/27/15	2211
02 LCSD for batch 1502970	1203381196	082715.S\e5H2733.D	08/27/15	2226
03 CAMO-15-102578RE	379487005	082715.S\e5H2734.D 082715.S\e5H2734.D	08/27/15	2242
04 CAMO-15-102570MS	1203381194	082715.S\e5H2738.D 082715.S\e5H2738.D	08/27/15	2342

Quality Control Data

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203376910**				
Client Sample:	**QC for batch 1501416**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501416**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1501417**	**Inst:**	**ECD6A.I**	**Dilution:**	**1**
Run Date:	**08/20/2015 12:39**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/20/2015 12:20**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**082015\E6H2006.D**	**Column:**	**1 RTX-CLP**		
	082015\E6H2006.D		**2 RTX-CLPII**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-18-4	1,2,3-Trichloropropane	U	0.050	ug/L	0.019	0.050	1
96-12-8	1,2-Dibromo-3-chloropropane	U	0.020	ug/L	0.009	0.020	1
106-93-4	1,2-Dibromoethane	U	0.020	ug/L	0.009	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	7.70	7.14	ug/L	108	(50%-150%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203376911**				
Client Sample:	**QC for batch 1501416**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501416**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1501417**	**Inst:**	**ECD6A.I**	**Dilution:**	**1**
Run Date:	**08/20/2015 13:05**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/20/2015 12:20**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**082015\E6H2007.D**	**Column:**	**1 RTX-CLP**		
	082015\E6H2007.D		**2 RTX-CLPII**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-18-4	1,2,3-Trichloropropane		0.539	ug/L	0.019	0.050	1
96-12-8	1,2-Dibromo-3-chloropropane		0.205	ug/L	0.009	0.020	1
106-93-4	1,2-Dibromoethane		0.206	ug/L	0.009	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	7.12	7.14	ug/L	99.7	(50%-150%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203376912**				
Client Sample:	**QC for batch 1501416**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1501416**	**Method:**	**SW846 8011**	**SOP Ref:**	**GL-OA-E-059**
Batch ID:	**1501417**	**Inst:**	**ECD6A.I**	**Dilution:**	**1**
Run Date:	**08/20/2015 13:30**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/20/2015 12:20**	**Aliquot:**	**35 mL**	**Final Volume:**	**35 mL**
Data File:	**082015\E6H2008.D**	**Column:**	**1 RTX-CLP**		
	082015\E6H2008.D		**2 RTX-CLPII**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
96-18-4	1,2,3-Trichloropropane		0.543	ug/L	0.019	0.050	1
96-12-8	1,2-Dibromo-3-chloropropane		0.208	ug/L	0.009	0.020	1
106-93-4	1,2-Dibromoethane		0.205	ug/L	0.009	0.020	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1-Chloro-2-fluorobenzene	7.35	7.14	ug/L	103	(50%-150%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378387**				
Client Sample:	**QC for batch 1501978**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501978**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1501983**	**Inst:**	**ECD7A.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 15:44**	**Analyst:**	**LOF**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 10:32**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082315.B\e7h2308.D**	**Column:**	**1 CLPesticides**		
	082315.B\e7h2308.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	0.720	1.00	ug/L	72	(32%-111%)
Decachlorobiphenyl	0.724	1.00	ug/L	72.4	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378388**				
Client Sample:	**QC for batch 1501978**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501978**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1501983**	**Inst:**	**ECD7A.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:00**	**Analyst:**	**LOF**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 10:32**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082315.B\e7h2309.D**	**Column:**	**1 CLPesticides**		
	082315.B\e7h2309.D		**2 CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.079	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.782	1.00	ug/L	78.2	(32%-111%)
Decachlorobiphenyl	0.769	1.00	ug/L	76.9	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378389**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1501978**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MS**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1501983**	**Inst:**	**ECD7A.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 17:04**	**Analyst:**	**LOF**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 10:32**	**Aliquot:**	**950 mL**	**Final Volume:**	**5 mL**
Data File:	**082315.B\e7h2313.D**	**Column:**	**1 CLPesticides**		
	082315.B\e7h2313.D		**2 CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0748	ug/L	0.00658	0.0211	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.780	1.05	ug/L	74.1	(32%-111%)
Decachlorobiphenyl	0.838	1.05	ug/L	79.6	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378391**				
Client Sample:	**QC for batch 1501978**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1501978**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1501983**	**Inst:**	**ECD7A.I**	**Dilution:**	**1**
Run Date:	**08/23/2015 16:16**	**Analyst:**	**LOF**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 10:32**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082315.B\e7h2310.D**	**Column:**	**1 CLPesticides**		
	082315.B\e7h2310.D		**2 CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0824	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.818	1.00	ug/L	81.8	(32%-111%)
Decachlorobiphenyl	0.780	1.00	ug/L	78	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203381192**				
Client Sample:	**QC for batch 1502970**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1502970**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1502971**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**08/27/2015 21:56**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/26/2015 18:50**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082715.S\e5H2731.D**	**Column:**	**1 Rtx-CLPesticides**		
	082715.S\e5H2731.D		**2 Rtx-CLPesticides2**		

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.677	1.00	ug/L	68	(32%-111%)
Decachlorobiphenyl	0.733	1.00	ug/L	73	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203381193**				
Client Sample:	**QC for batch 1502970**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1502970**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1502971**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**08/27/2015 22:11**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/26/2015 18:50**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082715.S\e5H2732.D**	**Column:**	**1 Rtx-CLPesticides**		
	082715.S\e5H2732.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0661	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.653	1.00	ug/L	65	(32%-111%)
Decachlorobiphenyl	0.710	1.00	ug/L	71	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/20/2015 12:19**	**Matrix:**	**W**
Lab Sample ID:	**1203381194**	**Date Received:**	**08/25/2015 08:50**		
Client Sample:	**QC for batch 1502970**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CAMO-15-102570MS**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1502971**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**08/27/2015 23:42**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/26/2015 18:50**	**Aliquot:**	**920 mL**	**Final Volume:**	**5 mL**
Data File:	**082715.S\e5H2738.D**	**Column:**	**1 Rtx-CLPesticides**		
	082715.S\e5H2738.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0776	ug/L	0.00679	0.0217	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.735	1.09	ug/L	68	(32%-111%)
Decachlorobiphenyl	0.668	1.09	ug/L	61	(36%-128%)

Pesticide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203381196**				
Client Sample:	**QC for batch 1502970**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1502970**	**Method:**	**SW846 3535A/8081B**	**SOP Ref:**	**GL-OA-E-041**
Batch ID:	**1502971**	**Inst:**	**ECD5A.I**	**Dilution:**	**1**
Run Date:	**08/27/2015 22:26**	**Analyst:**	**RXE1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/26/2015 18:50**	**Aliquot:**	**1000 mL**	**Final Volume:**	**5 mL**
Data File:	**082715.S\e5H2733.D**	**Column:**	**1 Rtx-CLPesticides**		
	082715.S\e5H2733.D		**2 Rtx-CLPesticides2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
118-74-1	Hexachlorobenzene		0.0673	ug/L	0.00625	0.020	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
4cmx	0.680	1.00	ug/L	68	(32%-111%)
Decachlorobiphenyl	0.723	1.00	ug/L	72	(36%-128%)

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
24-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/ECD	SW846 3535A/8081B	Liquid	ARSL (ESHL)
Batch ID:	**Sample Numbers:**		
1501983	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166)

Application Issues:

Failed Yield for Surrogates

Specification and Requirements Exception Description:	DER Disposition:
1. Sample 379487005 failed surrogate recovery.	1. Sample (See Below) failed to meet acceptance criteria for surrogate recovery and was re-extracted out of holding. The surrogates passed recoveries in the re-extract, both sets of data are reported. 379487005 (CAMO-15-102578) Decachlorobiphenyl [31* (36%-128%)] and Decachlorobiphenyl [32.1* (36%-128%)].

Originator's Name:

Rebecca Enzor 28-AUG-15

Data Validator/Group Leader:

Herbert Maier 31-AUG-15

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
28-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
GC/ECD	SW846 3535A/8081B	Liquid	ARSL (ESHL)
Batch ID:	**Sample Numbers:**		
1502971	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379861(2015-2227),379866(2015-2225)

Application Issues:

Container scanning event for custody missed

Sample Prepped out of Holding

Specification and Requirements Exception Description:	DER Disposition:
1. The container scanning event for custody was missed for samples 379487005, 379861004, 379861012 and 379866004. 2. Sample 379487005 was re-extracted out of holding.	1. The analyst did not scan samples into his/her custody. The analyst had physical custody of the samples during the analysis. 2. Sample (See Below) was re-extracted out of holding in order to confirm surrogate and/or batch QC failures. Surrogate failure did not confirm. Both sets of data are reported. 379487005 (CAMO-15-102578) [Received 18-AUG-15, within holding, re-extracted 26-AUG-15, out of holding 21-AUG-15].

Originator's Name:

Rebecca Enzor 28-AUG-15

Data Validator/Group Leader:

Herbert Maier 31-AUG-15

Herbicide Analysis

Case Narrative

GC Semivolatile Herbicide
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Method/Analysis Information

Procedure:	**Analysis of Chlorophenoxy Acid Herbicides by ECD**
Analytical Method:	SW846 8151A
Prep Method:	SW846 8151A
Analytical Batch Number:	1501992
Prep Batch Number:	1501991

Sample Analysis

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

Sample ID	Client ID
379487006	CAMO-15-102578
1203378411	Method Blank (MB)
1203378412	Laboratory Control Sample (LCS)
1203378417	Laboratory Control Sample Duplicate (LCSD)
1203378413	379641004(CASA-15-102634) Matrix Spike (MS)

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

Preparation/Analytical Method Verification

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-011 REV# 21.

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

Calibration Information

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

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

Quality Control (QC) Information

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

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

Laboratory Control Sample (LCS) Recovery
The LCS and/or 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 379641004 (CASA-15-102634) was selected for analysis as the matrix spike. A matrix spike duplicate was not extracted or analyzed with this SDG. A LCSD was extracted and analyzed with the batch to measure precision and accuracy of the spike analytes.

Spike Recovery Statement
The MS and/or MSD recoveries for this SDG were within the established acceptance limits.

Technical Information

Holding Time Specifications
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 DER was not required for the samples in this SDG. 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
Additional comments were not required for the SDG associated samples in this batch.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description
ECD3A.I_1	Agilent 7890A GC with duel uECD	HP6890 Series ECD	Rtx-CLP I	30m x 0.25mm, 0.25um (Rtx-CLPesticide)
ECD3A.I_2	Agilent 7890A GC with duel uECD	HP6890 Series ECD	Rtx-CLP II	30m x 0.25mm, 0.20um (Rtx-CLPesticideII)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

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

Client SDG: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

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

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: Barbara Bailey **Name: Barbara Bailey**

Date: 10 SEP 2015 **Title: Data Validator**

Sample Data Summary

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/14/2015 10:14**	**Matrix:**	**W**
Lab Sample ID:	**379487006**	**Date Received:**	**08/18/2015 08:55**		
Client Sample:	**PCP**	**Client:**	**ARSL004**	**Project:**	**ESHL00714**
Client ID:	**CAMO-15-102578**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1501992**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**08/21/2015 18:27**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:00**	**Aliquot:**	**980 mL**	**Final Volume:**	**10 mL**
Data File:	**082115\E3H2117.D**	**Column:**	**1 RTX-CLPEST 1**		
	082115\E3H2117.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.255	ug/L	0.085	0.255	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.59	5.10	ug/L	110	(40%-138%)

Quality Control Summary

Herbicide

Surrogate Recovery Report

SDG Number: 2015-2166

Matrix Type: LIQUID

Sample ID	Client ID	DCAA 1 %REC #	DCAA 2 %REC #
1203378411	MB for batch 1501991	85	92
1203378412	LCS for batch 1501991	102	121
1203378417	LCSD for batch 1501991	99	106
379487006	CAMO-15-102578	103	110
1203378413	CASA-15-102634MS	105	136

Surrogate	Acceptance Limits
DCAA = 2,4-Dichlorophenylacetic acid	(40%-138%)

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

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCS for batch 1501991**
Lab Sample ID **1203378412**
Instrument: **ECD3A.I**
Analyst: **MYA1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample**
Matrix: **WATER**
Analysis Date: **08/21/2015 17:22**
Prep Batch ID: **1501991**
Batch ID: **1501992**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	LCS	Pentachlorophenol	2.00	0.0	2.14	107	55-113

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **LCSD for batch 1501991**
Lab Sample ID **1203378417**
Instrument: **ECD3A.I**
Analyst: **MYA1**
Inj. Vol: **1 uL**

Sample Type: **Laboratory Control Sample Duplicate**
Matrix: **WATER**
Analysis Date: **08/21/2015 17:41**
Dilution: 1
Prep Batch ID: **1501991**
Batch ID: **1501992**

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	2.08	104	55-113	3	0-30

Herbicide

Quality Control Summary
Spike Recovery Report

SDG Number: **2015-2166**
Client ID: **CASA-15-102634MS**
Lab Sample ID **1203378413**
Instrument: **ECD3A.I**
Analyst: **MYA1**
Inj. Vol: **1 uL**

Sample Type: **Matrix Spike**
Matrix: **W**
Analysis Date: **08/21/2015 22:11**
Prep Batch ID: **1501991**
Batch ID: **1501992**
Dilution: 1

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
87-86-5	MS	Pentachlorophenol	2.02	0.00	U	1.93	95	24-119

Method Blank Summary

SDG Number:	**2015-2166**	**Client:**	**ARSL004**	**Matrix:**	**WATER**
Client ID:	**MB for batch 1501991**	**Instrument ID:**	**ECD3A.I_1** **ECD3A.I_2**	**Data File:**	**082115\E3H2113.D** **082115\E3H2113.D**
Lab Sample ID:	**1203378411**				
Column:	**RTX-CLPEST 1** **RTX-CLPEST 2**	**Prep Date:**	**08/21/2015 04:00**	**Analyzed:**	**08/21/15 17:02**

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 1501991	**1203378412**	**082115\E3H2114.D**	**08/21/15**	**1722**
02 LCSD for batch 1501991	**1203378417**	**082115\E3H2115.D**	**08/21/15**	**1741**
03 CAMO-15-102578	**379487006**	**082115\E3H2117.D** **082115\E3H2117.D**	**08/21/15**	**1827**
04 CASA-15-102634MS	**1203378413**	**082115\E3H2126.D** **082115\E3H2126.D**	**08/21/15**	**2211**

Quality Control Data

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378411**				
Client Sample:	**QC for batch 1501991**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**MB for batch 1501991**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1501992**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**08/21/2015 17:02**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**082115\E3H2113.D**	**Column:**	**1 RTX-CLPEST 1**		
	082115\E3H2113.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol	U	0.250	ug/L	0.0833	0.250	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	4.59	5.00	ug/L	91.9	(40%-138%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378412**				
Client Sample:	**QC for batch 1501991**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCS for batch 1501991**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1501992**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**08/21/2015 17:22**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**082115\E3H2114.D**	**Column:**	**1 RTX-CLPEST 1**		
	082115\E3H2114.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		2.14	ug/L	0.0833	0.250	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.06	5.00	ug/L	121	(40%-138%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**			**Matrix:**	**WATER**
Lab Sample ID:	**1203378417**				
Client Sample:	**QC for batch 1501991**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1501991**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1501992**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**08/21/2015 17:41**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:00**	**Aliquot:**	**1000 mL**	**Final Volume:**	**10 mL**
Data File:	**082115\E3H2115.D**	**Column:**	**1 RTX-CLPEST 1**		
	082115\E3H2115.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		2.08	ug/L	0.0833	0.250	2

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	5.30	5.00	ug/L	106	(40%-138%)

Herbicide
Certificate of Analysis
Sample Summary

SDG Number:	**2015-2166**	**Date Collected:**	**08/18/2015 11:46**	**Matrix:**	**W**
Lab Sample ID:	**1203378413**	**Date Received:**	**08/20/2015 08:40**		
Client Sample:	**QC for batch 1501991**	**Client:**	**ARSL004**	**Project:**	**QC**
Client ID:	**CASA-15-102634MS**	**Method:**	**SW846 8151A**	**SOP Ref:**	**GL-OA-E-011**
Batch ID:	**1501992**	**Inst:**	**ECD3A.I**	**Dilution:**	**1**
Run Date:	**08/21/2015 22:11**	**Analyst:**	**MYA1**	**Inj. Vol:**	**1 uL**
Prep Date:	**08/21/2015 04:00**	**Aliquot:**	**990 mL**	**Final Volume:**	**10 mL**
Data File:	**082115\E3H2126.D**	**Column:**	**1 RTX-CLPEST 1**		
	082115\E3H2126.D		**2 RTX-CLPEST 2**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	Column
87-86-5	Pentachlorophenol		1.93	ug/L	0.0842	0.253	1

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4-Dichlorophenylacetic acid	6.89	5.05	ug/L	136	(40%-138%)

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Sample ID	**Client ID**
379487001	CAMO-15-102572
379487002	CAMO-15-102596
379487004	CAMO-15-102578
379487007	CAMO-15-102602
1203376711	Method Blank (MB)**ICP**
1203376712	Laboratory Control Sample (LCS)
1203376715	379487002(CAMO-15-102596L) Serial Dilution (SD)
1203376713	379487002(CAMO-15-102596D) Sample Duplicate (DUP)
1203376714	379487002(CAMO-15-102596S) Matrix Spike (MS)
1203376729	Method Blank (MB)**ICP-MS**
1203376730	Laboratory Control Sample (LCS)
1203376733	379487002(CAMO-15-102596L) Serial Dilution (SD)
1203376731	379487002(CAMO-15-102596D) Sample Duplicate (DUP)
1203376732	379487002(CAMO-15-102596S) Matrix Spike (MS)
1203382327	Method Blank (MB)**CVAA**
1203382328	Laboratory Control Sample (LCS)
1203382334	379487007(CAMO-15-102602L) Serial Dilution (SD)
1203382330	379487007(CAMO-15-102602D) Sample Duplicate (DUP)
1203382332	379487007(CAMO-15-102602S) Matrix Spike (MS)

Sample Analysis

Method/Analysis Information

Analytical Batch:	1501339, 1501345, 1503458 and 1505876
Prep Batch :	1501338, 1501344 and 1503456
Standard Operating Procedures:	GL-MA-E-013 REV# 24, GL-MA-E-006 REV# 12, GL-MA-E-014 REV# 26, GL-MA-E-010 REV# 30 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.

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.

The Metals analysis - ICPMS was performed on a PerkinElmer NexION 350X ICPMS. The instrument is equipped with a ESI PFA-ST nebulizer, quadrupole mass spectrometer, dual mode electron multiplier detector, and Kinetic Energy Discrimination (KED) technology. Internal standards of scandium, germanium, indium, tantalum, and/or lutetium were utilized to cover the mass spectrum.

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: 379487002 (CAMO-15-102596)-ICP and ICP-MS and 379487007 (CAMO-15-102602)-CVAA.

Matrix Spike (MS/MSD) Recovery Statement
The percent recoveries (%R) obtained from the MS/MSD analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes.

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. The relative percent

differences (RPD) between the sample and its duplicate (DUP) were within acceptable limits for all applicable analytes.

Serial Dilution % Difference Statement
All applicable analytes in the serial dilution (SDILT) demonstrated acceptable correlation to its associated sample and met the established acceptance percent difference criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology. Holding time is measured by comparison of the date and time of sample collection to the date and time of sample preparation and analysis. 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
The samples in this SDG did not require dilutions.

Preparation Information
The samples in this SDG were not diluted and prepared 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
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.

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: 2015-2166 GEL Work Order: 379487

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.

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: Nik-Cole A. Elmore **Name: Nik-Cole Elmore**

Date: 14 SEP 2015 **Title: Data Validator**

Sample Data Summary

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 379487001 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102572 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	MTM1	08/28/15 14:11	082815W2−5	1503458

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1503458	1503456	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	AXS5

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 379487002 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102596 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	MTM1	08/28/15 14:23	082815W2−5	1503458

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** SW846

SAMPLE ID: 379487002 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102596 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	08/26/15 07:17	082615−1	1501339
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−38−2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	09/04/15 10:16	150903−4	1501345
7440−39−3	Barium	18	ug/L		1	5	5	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−42−8	Boron	23.9	ug/L	J	15	50	50	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−43−9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−70−2	Calcium	23000	ug/L		50	200	200	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−47−3	Chromium	5.48	ug/L	J	2	10	10	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	08/26/15 07:17	082615−1	1501339
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	08/26/15 07:17	082615−1	1501339
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7439−95−4	Magnesium	4370	ug/L		110	300	300	1	P	HSC	08/26/15 07:17	082615−1	1501339
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	08/26/15 07:17	082615−1	1501339
7439−98−7	Molybdenum	1.41	ug/L		0.165	0.5	0.5	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−02−0	Nickel	0.648	ug/L	J	0.5	2	2	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−09−7	Potassium	545	ug/L		50	150	150	1	P	HSC	08/26/15 07:17	082615−1	1501339
7782−49−2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	09/04/15 10:16	150903−4	1501345
7631−86−9	Silica	66500	ug/L		53	213	213	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−22−4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−23−5	Sodium	14000	ug/L		100	300	300	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−24−6	Strontium	101	ug/L		1	5	5	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−28−0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	09/02/15 21:25	150902−2	1501345
7440−31−5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−61−1	Uranium	0.159	ug/L	J	0.067	0.2	0.2	1	MS	BAJ	09/04/15 09:41	150903−3	1501345
7440−62−2	Vanadium	1.9	ug/L	J	1	5	5	1	P	HSC	08/26/15 07:17	082615−1	1501339
7440−66−6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	08/26/15 07:17	082615−1	1501339

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:**

SAMPLE ID: 379487002 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102596 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	75.5	mg/L		0.453	1.24	1.24	1		JJ2	09/04/15 15:10		1505876

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1501339	1501338	SW846 3005A	50	mL	50	mL	08/21/15	JP1
1501345	1501344	SW846 3005A	50	mL	50	mL	08/21/15	JP1
1503458	1503456	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	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: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 379487004 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102578 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	MTM1	08/28/15 14:24	082815W2−5	1503458

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1503458	1503456	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	AXS5

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** EPA

SAMPLE ID: 379487007 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102602 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	MTM1	08/28/15 14:26	082815W2−5	1503458

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:** SW846

SAMPLE ID: 379487007 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102602 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	08/26/15 07:14	082615−1	1501339
7440−36−0	Antimony	3	ug/L	U	1	3	3	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−38−2	Arsenic	4.63	ug/L	J	1.7	5	5	1	MS	BAJ	09/04/15 10:22	150903−4	1501345
7440−39−3	Barium	63.1	ug/L		1	5	5	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−41−7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−42−8	Boron	22.8	ug/L	J	15	50	50	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−43−9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−70−2	Calcium	20200	ug/L		50	200	200	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−47−3	Chromium	5.66	ug/L	J	2	10	10	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−48−4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−50−8	Copper	10	ug/L	U	3	10	10	1	P	HSC	08/26/15 07:14	082615−1	1501339
7439−89−6	Iron	100	ug/L	U	30	100	100	1	P	HSC	08/26/15 07:14	082615−1	1501339
7439−92−1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7439−95−4	Magnesium	849	ug/L		110	300	300	1	P	HSC	08/26/15 07:14	082615−1	1501339
7439−96−5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	08/26/15 07:14	082615−1	1501339
7439−98−7	Molybdenum	1.11	ug/L		0.165	0.5	0.5	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−02−0	Nickel	2	ug/L	U	0.5	2	2	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−09−7	Potassium	2410	ug/L		50	150	150	1	P	HSC	08/26/15 07:14	082615−1	1501339
7782−49−2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	09/04/15 10:22	150903−4	1501345
7631−86−9	Silica	41400	ug/L		53	213	213	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−22−4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−23−5	Sodium	16300	ug/L		100	300	300	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−24−6	Strontium	187	ug/L		1	5	5	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−28−0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	09/02/15 21:41	150902−2	1501345
7440−31−5	Tin	3.42	ug/L	J	2.5	10	10	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−61−1	Uranium	1.33	ug/L		0.067	0.2	0.2	1	MS	BAJ	09/04/15 09:48	150903−3	1501345
7440−62−2	Vanadium	13.9	ug/L		1	5	5	1	P	HSC	08/26/15 07:14	082615−1	1501339
7440−66−6	Zinc	5.7	ug/L	J	3.3	10	10	1	P	HSC	08/26/15 07:14	082615−1	1501339

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2015−2166 **CONTRACT:** ESHL00714 **METHOD TYPE:**

SAMPLE ID: 379487007 **BASIS:** As Received **DATE COLLECTED** 14−AUG−15

CLIENT ID: CAMO−15−102602 **LEVEL:** Low **DATE RECEIVED** 18−AUG−15

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	54	mg/L		0.453	1.24	1.24	1		JJ2	09/04/15 15:10		1505876

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1501339	1501338	SW846 3005A	50	mL	50	mL	08/21/15	JP1
1501345	1501344	SW846 3005A	50	mL	50	mL	08/21/15	JP1
1503458	1503456	EPA 245.1/245.2 Prep	20	mL	20	mL	08/27/15	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. 2015−2166

Contract: ESHL00714

Matrix: W

Sample ID	Analyte	Result	Units	Acceptance Window	Conc Qual	M*	MDL	RDL
1203376711								
	Aluminum	68	ug/L	+/−200	U	P	68	200
	Barium	1	ug/L	+/−5	U	P	1	5
	Beryllium	1	ug/L	+/−5	U	P	1	5
	Cobalt	1	ug/L	+/−5	U	P	1	5
	Calcium	50	ug/L	+/−200	U	P	50	200
	Boron	15	ug/L	+/−50	U	P	15	50
	Copper	3	ug/L	+/−10	U	P	3	10
	Magnesium	110	ug/L	+/−300	U	P	110	300
	Potassium	50	ug/L	+/−150	U	P	50	150
	Zinc	3.3	ug/L	+/−10	U	P	3.3	10
	Vanadium	1	ug/L	+/−5	U	P	1	5
	Tin	2.5	ug/L	+/−10	U	P	2.5	10
	Strontium	1	ug/L	+/−5	U	P	1	5
	Sodium	100	ug/L	+/−300	U	P	100	300
	Silica	53	ug/L	+/−213	U	P	53	213
	Manganese	2	ug/L	+/−10	U	P	2	10
	Iron	30	ug/L	+/−100	U	P	30	100
1203376729								
	Selenium	1.5	ug/L	+/−5	U	MS	1.5	5
	Silver	0.2	ug/L	+/−1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/−2	U	MS	0.45	2
	Arsenic	1.7	ug/L	+/−5	U	MS	1.7	5
	Chromium	2	ug/L	+/−10	U	MS	2	10
	Molybdenum	0.165	ug/L	+/−0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/−2	U	MS	0.5	2
	Lead	0.5	ug/L	+/−2	U	MS	0.5	2
	Cadmium	0.11	ug/L	+/−1	U	MS	0.11	1
	Antimony	1	ug/L	+/−3	U	MS	1	3
	Uranium	0.067	ug/L	+/−0.2	U	MS	0.067	0.2
1203382327								
	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. 2015−2166 **Client ID** CAMO−15−102596S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 379487002 **Spike ID:** 1203376714

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Boron	ug/L	75−125	559		23.9	J	500	107		P
Calcium	ug/L		28300		23000		5000	104	N/A	P
Cobalt	ug/L	75−125	493		1	U	500	98.6		P
Copper	ug/L	75−125	536		3	U	500	107		P
Iron	ug/L	75−125	5340		30	U	5000	107		P
Magnesium	ug/L	75−125	9730		4370		5000	107		P
Manganese	ug/L	75−125	509		2	U	500	102		P
Potassium	ug/L	75−125	5780		545		5000	105		P
Silica	ug/L		77600		66500		10700	104	N/A	P
Sodium	ug/L	75−125	19200		14000		5000	103		P
Strontium	ug/L	75−125	608		101		500	101		P
Tin	ug/L	75−125	528		2.5	U	500	105		P
Vanadium	ug/L	75−125	523		1.9	J	500	104		P
Zinc	ug/L	75−125	500		3.3	U	500	99.7		P
Aluminum	ug/L	75−125	5140		68	U	5000	102		P
Barium	ug/L	75−125	536		18		500	104		P
Beryllium	ug/L	75−125	516		1	U	500	103		P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2015−2166 **Client ID** CAMO−15−102596S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 379487002 **Spike ID:** 1203376732

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Antimony	ug/L	75−125	48.8		1	U	50	97.2		MS
Arsenic	ug/L	75−125	55.3		1.7	U	50	107		MS
Cadmium	ug/L	75−125	50		0.11	U	50	100		MS
Chromium	ug/L	75−125	57.5		5.48	J	50	104		MS
Lead	ug/L	75−125	49.8		0.5	U	50	99.5		MS
Molybdenum	ug/L	75−125	52.1		1.41		50	101		MS
Nickel	ug/L	75−125	54.3		0.648	J	50	107		MS
Selenium	ug/L	75−125	51.1		1.5	U	50	101		MS
Silver	ug/L	75−125	51		0.2	U	50	102		MS
Thallium	ug/L	75−125	48.8		0.45	U	50	97.5		MS
Uranium	ug/L	75−125	56.7		0.159	J	50	113		MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−5a−

Matrix Spike Summary

SDG NO. 2015−2166 **Client ID** CAMO−15−102602S

Contract: ESHL00714 **Level:** Low

Matrix: WATER **% Solids:**

Sample ID: 379487007 **Spike ID:** 1203382332

Analyte	Units	Acceptance Limit	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M*
Mercury	ug/L	75−125	2		0.067	U	2	100		AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

Metals
−6−
Duplicate Sample Summary

SDG No.: 2015−2166 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CAMO−15−102596D

Matrix: WATER **Level:** Low

Sample ID: 379487002 **Duplicate ID:** 1203376713 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68	U	68	U			P
Barium	ug/L	+/−5	18		18.3		1.32		P
Beryllium	ug/L		1	U	1	U			P
Boron	ug/L	+/−50	23.9	J	23.7	J	.634		P
Calcium	ug/L	+/−20%	23000		23000		.248		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%	4370		4380		.366		P
Manganese	ug/L		2	U	2	U			P
Potassium	ug/L	+/−150	545		561		2.86		P
Silica	ug/L	+/−20%	66500		66600		.101		P
Sodium	ug/L	+/−20%	14000		13900		1.25		P
Strontium	ug/L	+/−20%	101		102		.787		P
Tin	ug/L		2.5	U	2.5	U			P
Vanadium	ug/L	+/−5	1.9	J	1.98	J	4.05		P
Zinc	ug/L		3.3	U	3.3	U			P

***Analytical Methods:**

P SW846 3005A/6010C

Metals
−6−
Duplicate Sample Summary

SDG No.: 2015−2166 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CAMO−15−102596D

Matrix: WATER **Level:** Low

Sample ID: 379487002 **Duplicate ID:** 1203376731 **Percent Solids for Dup:** N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L		1	U	1	U			MS
Arsenic	ug/L		1.7	U	1.77	J	200		MS
Cadmium	ug/L		0.11	U	0.11	U			MS
Chromium	ug/L	+/−10	5.48	J	5.8	J	5.66		MS
Lead	ug/L		0.5	U	0.5	U			MS
Molybdenum	ug/L	+/−.5	1.41		1.41		.0711		MS
Nickel	ug/L	+/−2	0.648	J	0.6	J	7.69		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	0.159	J	0.158	J	.631		MS

***Analytical Methods:**

MS SW846 3005A/6020A

Metals
−6−
Duplicate Sample Summary

SDG No.: 2015−2166 **Lab Code:** GEL

Contract: ESHL00714 **Client ID:** CAMO−15−102602D

Matrix: WATER **Level:** Low

Sample ID: 379487007 **Duplicate ID:** 1203382330 **Percent Solids for Dup:** N/A

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2015−2166

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203376712								
	Aluminum	ug/L	5000	5030		101	80−120	P
	Barium	ug/L	500	509		102	80−120	P
	Beryllium	ug/L	500	506		101	80−120	P
	Boron	ug/L	500	517		103	80−120	P
	Calcium	ug/L	5000	5110		102	80−120	P
	Cobalt	ug/L	500	503		101	80−120	P
	Copper	ug/L	500	509		102	80−120	P
	Iron	ug/L	5000	5210		104	80−120	P
	Magnesium	ug/L	5000	5240		105	80−120	P
	Manganese	ug/L	500	502		100	80−120	P
	Potassium	ug/L	5000	5120		102	80−120	P
	Silica	ug/L	10700	10300		95.9	80−120	P
	Sodium	ug/L	5000	5110		102	80−120	P
	Strontium	ug/L	500	502		100	80−120	P
	Tin	ug/L	500	510		102	80−120	P
	Vanadium	ug/L	500	507		101	80−120	P
	Zinc	ug/L	500	488		97.6	80−120	P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2015−2166

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203376730								
	Antimony	ug/L	50	50.3		101	80−120	MS
	Arsenic	ug/L	50	54.1		108	80−120	MS
	Cadmium	ug/L	50	52.3		105	80−120	MS
	Chromium	ug/L	50	50.9		102	80−120	MS
	Lead	ug/L	50	50.5		101	80−120	MS
	Molybdenum	ug/L	50	50.6		101	80−120	MS
	Nickel	ug/L	50	53		106	80−120	MS
	Selenium	ug/L	50	52.4		105	80−120	MS
	Silver	ug/L	50	51.5		103	80−120	MS
	Thallium	ug/L	50	49.5		98.9	80−120	MS
	Uranium	ug/L	50	59.1		118	80−120	MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−7−
Laboratory Control Sample Summary

SDG NO. 2015−2166

Contract: ESHL00714

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

Sample ID	Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limit	M*
1203382328								
	Mercury	ug/L	2	1.91		95.5	85−115	AV

***Analytical Methods:**

AV **EPA 245.1/245.2**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2015−2166 **Client ID** CAMO−15−102596L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 379487002 **Serial Dilution ID:** 1203376715

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Aluminum	68	U	340	U				P
Barium	18		17.9	J	.893			P
Beryllium	1	U	5	U				P
Boron	23.9	J	75	U	100			P
Calcium	23000		22800		1.2		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	4370		4350		.261			P
Manganese	2	U	10	U				P
Potassium	545		510	J	6.38			P
Silica	66500		64200		3.5		10	P
Sodium	14000		13700		2.75		10	P
Strontium	101		104		2.42		10	P
Tin	2.5	U	12.5	U				P
Vanadium	1.9	J	5	U	100			P
Zinc	3.3	U	16.5	U				P

***Analytical Methods:**

P **SW846 3005A/6010C**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2015−2166 **Client ID** CAMO−15−102596L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 379487002 **Serial Dilution ID:** 1203376733

Analyte	Initial Value ug/L	C	Serial Value ug/L	C	% Difference	Qual	Acceptance Limit	M*
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	5.48	J	10	U	100			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.41		1.82	J	29.2			MS
Nickel	.648	J	2.5	U	100			MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.159	J	.335	U	100			MS

***Analytical Methods:**

MS **SW846 3005A/6020A**

METALS
−9−
Serial Dilution Sample Summary

SDG NO. 2015−2166 **Client ID** CAMO−15−102602L

Contract: ESHL00714

Matrix: LIQUID **Level:** Low

Sample ID: 379487007 **Serial Dilution ID:** 1203382334

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

***Analytical Methods:**

AV **EPA 245.1/245.2**

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Method/Analysis Information

Product: **Carbon and Total Organic**

Analytical Batch: 1501404 **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
379487001	CAMO-15-102572
379487004	CAMO-15-102578
1203376881	Method Blank (MB)
1203376882	Laboratory Control Sample (LCS)
1203377348	379487004(CAMO-15-102578) Sample Duplicate (DUP)
1203377349	379487004(CAMO-15-102578) 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# 13.

Preparation/Analytical Method Verification

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

Calibration Information

The Carbon analysis was performed on a O-I Analytical 1030W 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
Sample 379487004 (CAMO-15-102578) was selected for QC analysis.

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
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:	1501478 and 1502152	**Method:**	WSP-CN(T)
Prep Batch :	1501477 and 1502151	**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
379487001	CAMO-15-102572
379487004	CAMO-15-102578
1203377073	Method Blank (MB)
1203378798	Method Blank (MB)
1203377074	Laboratory Control Sample (LCS)
1203378799	Laboratory Control Sample (LCS)
1203377075	379485001(WST22-15-103884) Sample Duplicate (DUP)
1203378800	379487001(CAMO-15-102572) Sample Duplicate (DUP)
1203377078	379485001(WST22-15-103884) Matrix Spike (MS)
1203378803	379487001(CAMO-15-102572) Matrix Spike (MS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-095 REV# 17.

Preparation/Analytical Method Verification

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

Calibration Information

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

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

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

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

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

Quality Control (QC) Information

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

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

Quality Control (QC) Designation
Samples 379485001 (WST22-15-103884)- Batch 1501478 and 379487001 (CAMO-15-102572)- Batch 1502152 were selected for QC analysis.

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
Samples1203377074 (LCS) and 1203377078 (Non SDG 379485001MS)- Batch 1501478 were re-analyzed to verify the results. Samples1203378798 (MB), 1203378799 (LCS), 1203378800 (CAMO-15-102572DUP), 1203378803 (CAMO-15-102572MS) and 379487001 (CAMO-15-102572)- Batch 1502152 were re-analyzed due to instrument failure. The results from the reanalysis 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.

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:	1502419	**Method:**	Anions-W

Sample Analysis

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

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203379527	Method Blank (MB)
1203379528	Laboratory Control Sample (LCS)
1203379529	379487002(CAMO-15-102596) Sample Duplicate (DUP)
1203379530	379487002(CAMO-15-102596) Post Spike (PS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 24.

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
Sample 379487002 (CAMO-15-102596) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The spike recovery falls outside of the GEL acceptance limits but within the client specified limits.

Analyte	Sample	Value
Chloride	1203379530 (CAMO-15-102596PS)	118* (90%-110%)
Sulfate	1203379530 (CAMO-15-102596PS)	114* (90%-110%)

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
A data exception report (DER) 1442388 was generated for sample 1203379530 (CAMO-15-102596PS) in this SDG/batch.

Manual Integrations
Samples 1203379529 (CAMO-15-102596DUP), 1203379530 (CAMO-15-102596PS), 379487002 (CAMO-15-102596) and 379487007 (CAMO-15-102602) were manually integrated to correctly position the baseline as set in the calibration standards.

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:	1501130	**Method:**	EPA 350.1 Nitrogen, Ammonia L
Prep Batch :	1501129	**Method:**	EPA 350.1 Prep

Sample Analysis

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

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203376189	Method Blank (MB)
1203376190	Laboratory Control Sample (LCS)
1203377291	379487002(CAMO-15-102596) Sample Duplicate (DUP)
1203377293	379487002(CAMO-15-102596) 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+ 8500 Series.

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

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

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

Calibration Verification Information (CCV)

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

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

Quality Control (QC) Information

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

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

Quality Control (QC) Designation
Sample 379487002 (CAMO-15-102596) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The matrix spike recovered outside of the established acceptance limits due to matrix interference.

Analyte	Sample	Value
Nitrogen, Ammonia	1203377293 (CAMO-15-102596MS)	89.7* (90%-110%)

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
Sample1203377293 (CAMO-15-102596MS) was re-analyzed due to instrument failure. The results from the reanalysis are reported. Sample1203377291 (CAMO-15-102596DUP) was re-analyzed to verify the result.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1440855 was generated for sample 1203377293 (CAMO-15-102596MS) in this SDG/batch.

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:	1501128	**Method:**	Nitrogen, Total Kjeldahl (TKN)
Prep Batch :	1501127	**Method:**	EPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
379487001	CAMO-15-102572
379487004	CAMO-15-102578
1203376183	Method Blank (MB)
1203376184	Laboratory Control Sample (LCS)
1203376185	379487001(CAMO-15-102572) Sample Duplicate (DUP)
1203376187	379487001(CAMO-15-102572) 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+ 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
Sample 379487001 (CAMO-15-102572) was selected for QC analysis.

Matrix Spike (MS)/Post Spike (PS) Recovery Statement
The matrix spike recovered outside of the established acceptance limits due to matrix interference.

Analyte	Sample	Value
Nitrogen, Total Kjeldahl	1203376187 (CAMO-15-102572MS)	81.3* (90%-110%)

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
Samples1203376183 (MB), 1203376184 (LCS) and 379487004 (CAMO-15-102578) were re-analyzed due to instrument failure. The results from the reanalysis are reported.

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1442298 was generated for sample 1203376187 (CAMO-15-102572MS) in this SDG/batch.

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:	1501554	**Method:**	NO3NO2

Sample Analysis

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

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203377235	Method Blank (MB)
1203377236	Laboratory Control Sample (LCS)
1203377237	379485001(WST22-15-103884) Sample Duplicate (DUP)
1203377240	379485001(WST22-15-103884) 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
Sample 379485001 (WST22-15-103884) was selected for QC analysis.

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 following samples were diluted because target analyte concentrations exceeded the calibration range. 1203377237 (Non SDG 379485001DUP), 1203377240 (Non SDG 379485001PS) and 379487002 (CAMO-15-102596).

Analyte	379487 002
Nitrogen, Nitrate/Nitrite	5X

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

Miscellaneous Information

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

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	**Total Phosphorus**		
Analytical Batch:	1501776	**Method:**	EPA 365.4 Phosphorus, Total in
Prep Batch :	1501774	**Method:**	EPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203377849	Method Blank (MB)
1203377850	Laboratory Control Sample (LCS)
1203377851	379487002(CAMO-15-102596) Sample Duplicate (DUP)
1203377852	379487002(CAMO-15-102596) Matrix Spike (MS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-103 REV# 10.

Preparation/Analytical Method Verification

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

Calibration Information

The Nutrient analysis was performed on a Lachat QuickChem FIA+ 8500 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
Sample 379487002 (CAMO-15-102596) was selected for QC analysis.

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
Sample379487002 (CAMO-15-102596) was re-analyzed due to (its) proximity to an overrange sample. The results from the reanalysis 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.

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:	1502146	**Method:**	EPA 160.1 Solids, Dissolved-F

Sample Analysis

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

Sample ID	Client ID
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203378783	Method Blank (MB)
1203378785	Laboratory Control Sample (LCS)
1203378786	379642002(CASA-15-102654) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 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
Sample 379642002 (CASA-15-102654) was selected for QC analysis.

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:	1504613	**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
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203385406	Laboratory Control Sample (LCS)
1203385407	379861006(CASA-15-102655) Sample Duplicate (DUP)

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

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

Preparation/Analytical Method Verification

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

Calibration Information

The 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.

Quality Control (QC) Designation
Sample 379861006 (CASA-15-102655) was selected for QC analysis.

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

Technical Information

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

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

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

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

Miscellaneous Information

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

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Method/Analysis Information

Product: **pH**

Analytical Batch: 1503693 **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
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203382926	Laboratory Control Sample (LCS)
1203382930	379487002(CAMO-15-102596) Sample Duplicate (DUP)

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

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Standardization
The titrant was properly standardized

Quality Control (QC) Information

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

Quality Control (QC) Designation
Sample 379487002 (CAMO-15-102596) was selected for QC analysis.

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
Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203382930 (CAMO-15-102596DUP)		Received 18-AUG-15, out of holding 14-AUG-15
379487002 (CAMO-15-102596)		Received 18-AUG-15, out of holding 14-AUG-15
379487007 (CAMO-15-102602)		Received 18-AUG-15, out of holding 14-AUG-15

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
A data exception report (DER) 1443859 was generated for samples 379487002 (CAMO-15-102596), 379487007 (CAMO-15-102602) and 1203382930 (CAMO-15-102596DUP) in this SDG/batch.

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: 1502902 **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
379487002	CAMO-15-102596
379487007	CAMO-15-102602
1203381068	Method Blank (MB)
1203381069	Laboratory Control Sample (LCS)
1203381425	379826007(105-D) Sample Duplicate (DUP)
1203381426	379826007(105-D) Matrix Spike (MS)

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

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

Preparation/Analytical Method Verification

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

Calibration Information

The Titration 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
Sample 379826007 (105-D) was selected for QC analysis.

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.

GEL LABORATORIES LLC

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Qualifier Definition Report
for

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

Client SDG: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
H Analytical holding time was exceeded
J Value is estimated
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: Tom Lewis, Jr **Name: Thomas Lewis**

Date: 14 SEP 2015 **Title: Data Validator**

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: September 14, 2015

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: 2015-2166

Client Sample ID:	CAMO-15-102572	Project:	ESHL00714
Sample ID:	379487001	Client ID:	ARSL004
Matrix:	W		
Collect Date:	14-AUG-15 12:38		
Receive Date:	18-AUG-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	J	0.519	0.330	1.00	mg/L	1	TSM	08/19/15	1512	1501404	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/27/15	1212	1502152	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	08/25/15	1348	1501128	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/27/15	0900	1502151
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	08/24/15	2000	1501127

The following Analytical Methods were performed:

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

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: September 14, 2015

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: 2015-2166

Client Sample ID:	CAMO-15-102596	Project:	ESHL00714
Sample ID:	379487002	Client ID:	ARSL004
Matrix:	W		
Collect Date:	14-AUG-15 12:38		
Receive Date:	18-AUG-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
Anions-W "As Received"											
Bromide	J	0.139	0.067	0.200	mg/L	1	MXL2	08/22/15	0347	1502419	1
Chloride		9.29	0.067	0.200	mg/L	1					
Fluoride		0.197	0.033	0.100	mg/L	1					
Sulfate		16.0	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.0669	0.017	0.050	mg/L	1	KLP1	08/20/15	1316	1501130	2
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0424	0.017	0.050	mg/L	1	KLP1	08/24/15	1531	1501776	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		5.90	0.085	0.250	mg/L	5	AXH3	08/19/15	0929	1501554	4
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		183	3.40	14.3	mg/L		MXB3	08/21/15	1323	1502146	5
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 21.4C	H	8.42	0.010	0.100	SU	1	AMB	08/29/15	1600	1503693	6
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3	U	ND	0.725	1.00	mg/L		AMB	08/25/15	1824	1502902	7
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		2150	1.00	1.00	umhos/cm	1	AMB	09/02/15	1546	1504613	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	08/19/15	1521	1501129
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/24/15	1430	1501774

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Certificate of Analysis

Report Date: September 14, 2015

Company :	Los Alamos National Laboratory		
Address :	TA-03, SM271, Drop Pt. 02U, Rm111		
	Los Alamos, New Mexico 87545		
Contact:	Mr. Keith Greene	Client SDG:	2015-2166
Project:	LANL-WQH Groundwater Samples		

Client Sample ID:	CAMO-15-102596	Project:	ESHL00714
Sample ID:	379487002	Client ID:	ARSL004

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 300.0	
2	EPA 350.1	
3	EPA 365.4	
4	EPA 353.2	
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: September 14, 2015

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: 2015-2166

Client Sample ID:	CAMO-15-102578	Project:	ESHL00714
Sample ID:	379487004	Client ID:	ARSL004
Matrix:	W		
Collect Date:	14-AUG-15 10:14		
Receive Date:	18-AUG-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average	U	ND	0.330	1.00	mg/L	1	TSM	08/19/15	1553	1501404	1
Flow Injection Analysis											
WSP-CN(T) "As Received"											
Cyanide, Total	U	ND	1.67	5.00	ug/L	1	AXH3	08/20/15	1135	1501478	2
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	08/25/15	1435	1501128	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	08/20/15	0859	1501477
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	08/24/15	2000	1501127

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: September 14, 2015

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: 2015-2166

Client Sample ID:	CAMO-15-102602	Project:	ESHL00714
Sample ID:	379487007	Client ID:	ARSL004
Matrix:	W		
Collect Date:	14-AUG-15 10:14		
Receive Date:	18-AUG-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
Anions-W "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MXL2	08/22/15	0523	1502419	1
Chloride		2.43	0.067	0.200	mg/L	1					
Fluoride		0.403	0.033	0.100	mg/L	1					
Sulfate		4.58	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia		0.114	0.017	0.050	mg/L	1	KLP1	08/20/15	1325	1501130	2
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	U	ND	0.017	0.050	mg/L	1	KLP1	08/24/15	1456	1501776	3
NO3NO2 "As Received"											
Nitrogen, Nitrate/Nitrite		0.479	0.017	0.050	mg/L	1	AXH3	08/19/15	0930	1501554	4
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		117	3.40	14.3	mg/L		MXB3	08/21/15	1323	1502146	5
Titration and Ion Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 21.2C	H	8.14	0.010	0.100	SU	1	AMB	08/29/15	1609	1503693	6
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3	U	ND	0.725	1.00	mg/L		AMB	08/25/15	1830	1502902	7
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						
EPA120.1 Specific Conductivity "As Received"											
Conductivity		177	1.00	1.00	umhos/cm	1	AMB	09/02/15	1547	1504613	8

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.1 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	08/19/15	1521	1501129
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	08/24/15	1430	1501774

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Certificate of Analysis

Report Date: September 14, 2015

Company :	Los Alamos National Laboratory		
Address :	TA-03, SM271, Drop Pt. 02U, Rm111		
	Los Alamos, New Mexico 87545		
Contact:	Mr. Keith Greene	Client SDG:	2015-2166
Project:	LANL-WQH Groundwater Samples		

Client Sample ID:	CAMO-15-102602	Project:	ESHL00714
Sample ID:	379487007	Client ID:	ARSL004

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

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QC Summary

Report Date: September 14, 2015

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

Contact: **Mr. Keith Greene**

Workorder: **379487**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Carbon Analysis											
Batch 1501404											
QC1203377348 379487004 DUP											
Total Organic Carbon Average		U	ND	U	ND	mg/L	N/A			TSM	08/19/15 16:34
QC1203376882 LCS											
Total Organic Carbon Average	10.0				9.79	mg/L		97.9	(85%-115%)		08/19/15 14:26
QC1203376881 MB											
Total Organic Carbon Average				U	ND	mg/L					08/19/15 14:13
QC1203377349 379487004 PS											
Total Organic Carbon Average	10.0	U	ND		10.8	mg/L		105	(65%-120%)		08/19/15 17:14
Flow Injection Analysis											
Batch 1501478											
QC1203377075 379485001 DUP											
Cyanide, Total		U	ND	U	ND	ug/L	N/A			AXH3	08/20/15 11:33
QC1203377074 LCS											
Cyanide, Total	50.0				52.8	ug/L		106	(90%-110%)		08/20/15 11:43
QC1203377073 MB											
Cyanide, Total				U	ND	ug/L					08/20/15 11:31
QC1203377078 379485001 MS											
Cyanide, Total	100	U	ND		109	ug/L		109	(90%-110%)		08/20/15 11:44
Batch 1502152											
QC1203378800 379487001 DUP											
Cyanide, Total		U	ND	U	ND	ug/L	N/A			AXH3	08/27/15 12:39
QC1203378799 LCS											
Cyanide, Total	50.0				51.9	ug/L		104	(90%-110%)		08/27/15 12:11
QC1203378798 MB											
Cyanide, Total				U	ND	ug/L					08/27/15 12:11
QC1203378803 379487001 MS											
Cyanide, Total	100	U	ND		106	ug/L		106	(90%-110%)		08/27/15 12:45
Ion Chromatography											
Batch 1502419											
QC1203379529 379487002 DUP											
Bromide		J	0.139	J	0.148	mg/L	6.15 ^		(+/-0.200)	MXL2	08/22/15 04:19

QC Summary

Workorder: **379487**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1502419											
Chloride			9.29		9.29	mg/L	0.042		(0%-20%)	MXL2	08/22/15 04:19
Fluoride			0.197		0.189	mg/L	3.94 ^		(+/-0.100)		
Sulfate			16.0		15.8	mg/L	0.735		(0%-20%)		
QC1203379528 LCS											
Bromide	1.25				1.35	mg/L		108	(90%-110%)		08/22/15 03:15
Chloride	5.00				4.86	mg/L		97.2	(90%-110%)		
Fluoride	2.50				2.61	mg/L		104	(90%-110%)		
Sulfate	10.0				10.3	mg/L		103	(90%-110%)		
QC1203379527 MB											
Bromide				U	ND	mg/L					08/22/15 02:43
Chloride				U	ND	mg/L					
Fluoride				U	ND	mg/L					
Sulfate				U	ND	mg/L					
QC1203379530 379487002 PS											
Bromide	1.25	J	0.139		1.41	mg/L		102	(90%-110%)		08/22/15 04:51
Chloride	5.00		9.29		15.2	mg/L		118*	(90%-110%)		
Fluoride	2.50		0.197		2.76	mg/L		102	(90%-110%)		
Sulfate	10.0		16.0		27.4	mg/L		114*	(90%-110%)		
Nutrient Analysis											
Batch 1501128											
QC1203376185 379487001 DUP											
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A			KLP1	08/25/15 13:49
QC1203376184 LCS											
Nitrogen, Total Kjeldahl	1.00				0.990	mg/L		99	(90%-110%)		08/25/15 13:36
QC1203376183 MB											
Nitrogen, Total Kjeldahl				U	ND	mg/L					08/25/15 13:35

QC Summary

Workorder: **379487**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Nutrient Analysis											
Batch 1501128											
QC1203376187 379487001 MS											
Nitrogen, Total Kjeldahl	1.00	U	ND		0.813	mg/L		81.3*	(90%-110%)	KLP1	08/25/15 13:50
Batch 1501130											
QC1203377291 379487002 DUP											
Nitrogen, Ammonia			0.0669		0.0923	mg/L	31.9 ^		(+/-0.050)	KLP1	08/20/15 13:20
QC1203376190 LCS											
Nitrogen, Ammonia	1.00				0.970	mg/L		97	(90%-110%)		08/20/15 13:09
QC1203376189 MB											
Nitrogen, Ammonia				U	ND	mg/L					08/20/15 13:08
QC1203377293 379487002 MS											
Nitrogen, Ammonia	1.00		0.0669		0.964	mg/L		89.7*	(90%-110%)		08/20/15 13:35
Batch 1501554											
QC1203377237 379485001 DUP											
Nitrogen, Nitrate/Nitrite			12.9		13.6	mg/L	5.28		(0%-20%)	AXH3	08/19/15 09:22
QC1203377236 LCS											
Nitrogen, Nitrate/Nitrite	1.00				1.05	mg/L		105	(90%-110%)		08/19/15 09:20
QC1203377235 MB											
Nitrogen, Nitrate/Nitrite				U	ND	mg/L					08/19/15 09:19
QC1203377240 379485001 PS											
Nitrogen, Nitrate/Nitrite	1.00		1.29		2.23	mg/L		94	(90%-110%)		08/19/15 09:23
Batch 1501776											
QC1203377851 379487002 DUP											
Phosphorus, Total as P		J	0.0424	J	0.0375	mg/L	12.3 ^		(+/-0.050)	KLP1	08/24/15 14:54
QC1203377850 LCS											
Phosphorus, Total as P	1.00				1.06	mg/L		106	(83%-123%)		08/24/15 14:51
QC1203377849 MB											
Phosphorus, Total as P				U	ND	mg/L					08/24/15 14:50
QC1203377852 379487002 MS											
Phosphorus, Total as P	1.00	J	0.0424		1.09	mg/L		105	(59%-141%)		08/24/15 14:55
Solids Analysis											
Batch 1502146											
QC1203378786 379642002 DUP											
Total Dissolved Solids			170		170	mg/L	0		(0%-5%)	MXB3	08/21/15 13:23

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QC Summary

Workorder: **379487**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Solids Analysis										
Batch 1502146										
QC1203378785 LCS										
Total Dissolved Solids	300			300	mg/L		100	(95%-105%)	MXB3	08/21/15 13:23
QC1203378783 MB										
Total Dissolved Solids			U	ND	mg/L					08/21/15 13:23
Titration and Ion Analysis										
Batch 1502902										
QC1203381425 379826007 DUP										
Alkalinity, Total as CaCO3		414		414	mg/L	0.125		(0%-20%)	AMB	08/25/15 19:14
QC1203381069 LCS										
Alkalinity, Total as CaCO3	50.0			52.2	mg/L		104	(90%-110%)		08/25/15 18:14
QC1203381068 MB										
Alkalinity, Total as CaCO3			U	ND	mg/L					08/25/15 18:09
Carbonate alkalinity (CaCO3)			U	ND	mg/L					
QC1203381426 379826007 MS										
Alkalinity, Total as CaCO3	50.0	414		476	mg/L		N/A	(80%-120%)		08/25/15 19:18
Batch 1503693										
QC1203382930 379487002 DUP										
pH	H	8.42	H	8.44	SU	0.237		(0%-5%)	AMB	08/29/15 16:07
QC1203382926 LCS										
pH	7.00			7.04	SU		101	(99%-101%)		08/29/15 15:57
Batch 1504613										
QC1203385407 379861006 DUP										
Conductivity		443		443	umhos/cm	0		(0%-10%)	AMB	09/02/15 16:05
QC1203385406 LCS										
Conductivity	1410			1420	umhos/cm		101	(95%-105%)		09/02/15 15:44

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

QC Summary

Workorder: **379487**

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

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
20-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 350.1, EPA 350.1 SC	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1501130	See Below		

Potentially affected work order(s)(SDG): 379485(2015-2164),379487(2015-2166)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Sample improperly preserved

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203377293MS 2. Sample improperly preserved: 379485 001	1. The matrix spike recovered outside of the established acceptance limits due to matrix interference. Nitrogen, Ammonia 1203377293 (CAMO-15-102596MS) [89.7* (90%-110%)]. 2. Sample received improperly preserved, run as received per PM instructions.

Originator's Name:

Kristen Mizzell 20-AUG-15

Data Validator/Group Leader:

Aubrey Kingsbury 20-AUG-15

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
25-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
LACHAT Flow Injection Analyzer	EPA 351.2, EPA 351.2 SC	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1501128	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379608(2015-2185),379641(2015-2192),379642(2015-2191)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203376187MS	1. The matrix spike recovered outside of the established acceptance limits due to matrix interference. Nitrogen, Total Kjeldahl 1203376187 (CAMO-15-102572MS) [81.3* (90%-110%)].

Originator's Name:

Kristen Mizzell 25-AUG-15

Data Validator/Group Leader:

Aubrey Kingsbury 25-AUG-15

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
25-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
IC	EPA 300.0	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1502419	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379726(2015-2208),379728(2015-2207)

Application Issues:

Failed Recovery for MS/MSD, or PS/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. Failed Recovery for MS/MSD, or PS/PSD: QC 1203379530PS	1. The spike recovery falls outside of the GEL acceptance limits but within the client specified limits. Chloride 1203379530 (CAMO-15-102596PS) [118* (90%-110%)]. Sulfate 1203379530 (CAMO-15-102596PS) [114* (90%-110%)].

Originator's Name:

Marcy Lamb 25-AUG-15

Data Validator/Group Leader:

Mary Sherwood 01-SEP-15

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
29-AUG-15	Industrial	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ELECTRODE	EPA 150.1, SM 4500-H B, SW846 9040C	Liquid	ENRG, ESHL, HNLK, UCOR
Batch ID:	**Sample Numbers:**		
1503693	See Below		

Potentially affected work order(s)(SDG): **379487(2015-2166),379490(2015-2168),379502,379641(2015-2192),379642(2015-2191),379728(2015-2207),379759,379914,380157(2015-2266),380164(2015-2269)**

Application Issues:

Container scanning event for custody missed

Sample received out of holding

Specification and Requirements Exception Description:	DER Disposition:
1. Sample received out of holding: 379487 002,007 379490 001 379502 004,007,010 379641 011 379642 002 379728 002 379759 001 379914 001 380157 001 380164 001 QC 1203382927DUP,1203382930DUP, 1203383945DUP	1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203382927 (EMWSW5250DUP) [See applicable report]. 1203382930 (CAMO-15-102596DUP) [See applicable report]. 1203383945 (MEBOT0100DUP) [See applicable report]. 379487002 (CAMO-15-102596) [See applicable report]. 379487007 (CAMO-15-102602) [See applicable report]. 379490001 (Urban-15-102336) [See applicable report]. 379502004 (EMWSW5250) [See applicable report]. 379502007 (EMWSW5256) [See applicable report]. 379502010 (EMWSW5261) [See applicable report]. 379641011 (CASA-15-102649) [See applicable report]. 379642002 (CASA-15-102654) [See applicable report]. 379728002 (CASA-15-102653) [See applicable report]. 379759001 (MEBOT0100) [See applicable report]. 379914001 (Weir at Water Front Drive) [See applicable report]. 380157001 (WST60-15-104263) [See applicable report]. 380164001 (WST16-15-104269) [See applicable report].
2.Container scanning event for custody missed : 379759001	2.The analyst did not scan samples into his/her custody. The analyst had physical custody of the sample during the analysis.

Originator's Name:

Alyson Boltz 29-AUG-15

Data Validator/Group Leader:

Elzbieta Szulc 01-SEP-15

Radiological Analysis

Radiochemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2015-2166
Work Order #: 379487

Method/Analysis Information

Product:	**Alphaspec Am241 Liquid**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number:	1502314

Sample ID	**Client ID**
379487004	CAMO-15-102578
1203379246	Method Blank (MB)
1203379248	Laboratory Control Sample (LCS)
1203379247	379487004(CAMO-15-102578) Sample Duplicate (DUP)

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

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

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibration was performed in September 2015.

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 1203379246 (MB) and 1203379248 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 379487004 (CAMO-15-102578). The QC was from ARSL work order 379487.

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

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

Technical Information:

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

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

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

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

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

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

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

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

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Alphaspec Pu, Liquid**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1502316

Sample ID	Client ID
379487004	CAMO-15-102578

1203379249	Method Blank (MB)
1203379251	Laboratory Control Sample (LCS)
1203379250	379487004(CAMO-15-102578) Sample Duplicate (DUP)

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

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

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibrations were performed in August 2015 and September 2015.

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 1203379249 (MB) and 1203379251 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 379487004 (CAMO-15-102578). The QC was from ARSL work order 379487.

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

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

Technical Information:

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

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

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation

A data exception report (DER) 1446847 was generated for sample 1203379250 (CAMO-15-102578DUP) in this SDG/batch. DER 1446847 was generated due to RDL less than MDA. 1. Sample 379726002 did not meet the Pu-238 detection limit and sample 1203379250 did not meet the Pu-238 and Pu-239/240 detection limits due to the high standard deviation. 1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The samples were counted 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 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:	1502317

Sample ID	Client ID
379487004	CAMO-15-102578
1203379252	Method Blank (MB)
1203379254	Laboratory Control Sample (LCS)
1203379253	379487004(CAMO-15-102578) Sample Duplicate (DUP)

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

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

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. Calibrations are performed monthly using mixed alpha standards comprised of the following: Gd-148, Np-237, and Cm-244. The initial Calibrations were performed in August 2015 and September 2015.

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 1203379252 (MB) and 1203379254 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 379487004 (CAMO-15-102578). The QC was from ARSL work order 379487.

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

CSU
The U-233/234, U-235/236, and U-238 blank results are 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 1203379252 (MB) was recounted due to detector error. 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 U-233/234 and U-235/236 blank results are greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Gammaspec**
Analytical Method:	EPA 901.1
Analytical Batch Number:	1501923

Sample ID	Client ID
379487004	CAMO-15-102578
1203378217	Method Blank (MB)
1203378219	Laboratory Control Sample (LCS)
1203378218	379641008(CASA-15-102635) Sample Duplicate (DUP)

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

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

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met. The initial Calibrations were performed in August 2015, March 2015 and October 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: 379641008 (CASA-15-102635). The QC was from ARSL work order 379641.

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

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

Technical Information:

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

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

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

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

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/DOE RP501 Rev. 1 Modified
Analytical Batch Number:	1504241

Sample ID	Client ID
379487004	CAMO-15-102578
1203384413	Method Blank (MB)
1203384416	Laboratory Control Sample (LCS)
1203384414	379866002(CAMO-15-102570) Sample Duplicate (DUP)
1203384415	379866002(CAMO-15-102570) 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-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 1203384413 (MB) and 1203384416 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 379866002 (CAMO-15-102570). The QC was from ARSL work order 379866.

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 379487004 (CAMO-15-102578) was recounted due to results more negative than the three sigma TPU. The second count is reported. Sample 1203384414 (CAMO-15-102570DUP) was verified by recounting at least five days from the separation date. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced

SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

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

Additional Comments
The matrix spike, 1203384415 (CAMO-15-102570MS), 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:	1504242

Sample ID	Client ID
379487004	CAMO-15-102578
1203384417	Method Blank (MB)
1203384421	Laboratory Control Sample (LCS)
1203384418	379641008(CASA-15-102635) Sample Duplicate (DUP)
1203384419	379641008(CASA-15-102635) Matrix Spike (MS)
1203384420	379641008(CASA-15-102635) Matrix Spike Duplicate (MSD)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 18.

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 1203384417 (MB) and 1203384421 (LCS) were changed to 1.0 per client request.

Designated QC
The following sample was used for QC: 379641008 (CASA-15-102635). The QC was from ARSL work order 379641.

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
Samples 1203384419 (CASA-15-102635MS) and 1203384421 (LCS) were recounted due to high recovery. 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.

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, 1203384419 (CASA-15-102635MS) and 1203384420 (CASA-15-102635MSD), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

GEL LABORATORIES LLC

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Qualifier Definition Report
for

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

Client SDG: 2015-2166 GEL Work Order: 379487

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: Heather M. McCarty **Name:** **Heather McCarty**

Date: **14 SEP 2015** **Title:** **Analyst II**

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
09-SEP-15	Radiochemistry	Specifications	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
ALPHA SPECTROMETER	DOE EML HASL-300, Pu-11-RC Modified	Liquid	ESHL
Batch ID:	**Sample Numbers:**		
1502316	See Below		

Potentially affected work order(s)(SDG): 379487(2015-2166),379641(2015-2192),379726(2015-2208)

Application Issues:

RDL less than MDA

Specification and Requirements Exception Description:	DER Disposition:
1. Sample 379726002 did not meet the Pu-238 detection limit and sample 1203379250 did not meet the Pu-238 and Pu-239/240 detection limits due to the high standard deviation.	1. When a blank population is performed the MDC is greater than the RDL due to the high standard deviation. The samples were counted the maximum count time of 1000 minutes in order to achieve the lowest possible MDAs. Reporting results.

Originator's Name:

Melanie Aycock 09-SEP-15

Data Validator/Group Leader:

Jessica Davis 10-SEP-15

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 14, 2015

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

Client Sample ID: CAMO-15-102578
Sample ID: 379487004
Matrix: W
Collect Date: 14-AUG-15
Receive Date: 18-AUG-15
Collector: Client

Project: ESHL00714
Client ID: ARSL004

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis														
Alphaspec Am241 Liquid "As Received"														
Americium-241	U	-1.11E-09	+/-0.00627	0.0356	0.0148	+/-0.00627	0.050	pCi/L		HAKB	09/09/15	1538	1502314	1
Alphaspec Pu, Liquid "As Received"														
Plutonium-238	U	-0.00228	+/-0.0109	0.0457	0.0198	+/-0.0109	0.050	pCi/L		HAKB	09/08/15	1609	1502316	2
Plutonium-239/240	U	0.00684	+/-0.0131	0.0408	0.0173	+/-0.0131	0.050	pCi/L						
Alphaspec U, Liquid "As Received"														
Uranium-234		0.777	+/-0.0535	0.141	0.0655	+/-0.0749	1.00	pCi/L		HAKB	09/08/15	1433	1502317	3
Uranium-235/236	U	0.084	+/-0.020	0.0996	0.0438	+/-0.0208	1.00	pCi/L						
Uranium-238		0.425	+/-0.0398	0.131	0.0604	+/-0.0491	0.500	pCi/L						
Rad Gamma Spec Analysis														
Gammaspec "As Received"														
Cesium-137	U	-1.7	+/-1.33	4.06	1.89	+/-1.39	8.00	pCi/L		MJH1	09/03/15	1518	1501923	4
Cobalt-60	U	-1.15	+/-1.03	3.47	1.52	+/-1.07	8.00	pCi/L						
Neptunium-237	U	2.19	+/-2.26	7.96	3.79	+/-2.32	10.0	pCi/L						
Potassium-40	U	25.7	+/-21.3	38.8	17.2	+/-21.4	10.0	pCi/L						
Sodium-22	U	-1.05	+/-1.24	4.25	1.92	+/-1.27	10.0	pCi/L						
Rad Gas Flow Proportional Counting														
GFPC, Sr90, liquid "As Received"														
Strontium-90	U	0.127	+/-0.144	0.491	0.228	+/-0.144	0.500	pCi/L		KSD1	09/11/15	0915	1504241	5
WSP-GrossA/B "As Received"														
Beta		2.90	+/-0.933	2.73	1.19	+/-0.965	3.00	pCi/L		JXB7	09/09/15	1135	1504242	6
Alpha	U	0.409	+/-0.736	2.82	1.12	+/-0.737	3.00	pCi/L		JXB7	09/11/15	0719	1504242	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/DOE RP501 Rev. 1 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"	1502314	72.3	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1502316	79.7	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1502317	82.6	(50%-105%)

GEL LABORATORIES LLC

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Certificate of Analysis

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

Los Alamos, New Mexico 87545

Report Date: September 14, 2015

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

Client Sample ID: CAMO-15-102578
Sample ID: 379487004

Project: ESHL00714
Client ID: ARSL004

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Strontium Carrier	GFPC, Sr90, liquid "As Received"	1504241	100	(50%-105%)

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 14, 2015

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

Los Alamos, New Mexico

Contact: **Mr. Keith Greene**

Workorder: **379487**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1502314										
QC1203379247 379487004 DUP										
Americium-241	U	-1.11E-09	U	0.0145	pCi/L	0.553		(0-1)	HAKB	09/09/1515:38
	Uncert:	+/-0.00627		+/-0.00685						
	TPU:	+/-0.00627		+/-0.00687						
**Americium-243 Tracer	2.67	1.93		2.23	pCi/L		83.5	(50%-105%)		
	Uncert:	+/-0.0766		+/-0.080						
	TPU:	+/-0.132		+/-0.136						
QC1203379248 LCS										
Americium-241	1.97			1.99	pCi/L		101	(80%-120%)	HAKB	09/09/1515:38
	Uncert:			+/-0.060						
	TPU:			+/-0.100						
**Americium-243 Tracer	2.14			1.78	pCi/L		83.1	(50%-105%)		
	Uncert:			+/-0.0616						
	TPU:			+/-0.106						
QC1203379246 MB										
Americium-241			U	-0.00336	pCi/L				HAKB	09/09/1515:38
	Uncert:			+/-0.00531						
	TPU:			+/-0.00531						
**Americium-243 Tracer	2.14			1.87	pCi/L		87.5	(50%-105%)		
	Uncert:			+/-0.0598						
	TPU:			+/-0.104						
Batch 1502316										
QC1203379250 379487004 DUP										
Plutonium-238	U	-0.00228	U	-0.0031	pCi/L	0.0213		(0-1)	HAKB	09/08/1516:08
	Uncert:	+/-0.0109		+/-0.00819						
	TPU:	+/-0.0109		+/-0.00819						
Plutonium-239/240	U	0.00684	U	0.00928	pCi/L	0.0459		(0-1)		
	Uncert:	+/-0.0131		+/-0.0135						
	TPU:	+/-0.0131		+/-0.0135						
**Plutonium-242 Tracer	2.48	1.97		1.75	pCi/L		70.7	(50%-105%)		
	Uncert:	+/-0.0764		+/-0.0881						
	TPU:	+/-0.128		+/-0.143						
QC1203379251 LCS										
Plutonium-238			U	0.0098	pCi/L			(80%-120%)	HAKB	09/08/1516:08
	Uncert:			+/-0.00588						
	TPU:			+/-0.00589						
Plutonium-239/240	1.97			1.88	pCi/L		95.3	(80%-120%)		
	Uncert:			+/-0.061						
	TPU:			+/-0.100						
**Plutonium-242 Tracer	1.98			1.80	pCi/L		90.7	(50%-105%)		
	Uncert:			+/-0.0626						
	TPU:			+/-0.105						

QC Summary

Workorder: 379487

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1502316										
QC1203379249 MB										
Plutonium-238			U	0.00198	pCi/L				HAKB	09/08/1516:09
Uncert:				+/-0.00342						
TPU:				+/-0.00343						
Plutonium-239/240			U	0.00791	pCi/L					
Uncert:				+/-0.00559						
TPU:				+/-0.0056						
**Plutonium-242 Tracer	1.98			1.60	pCi/L		80.7	(50%-105%)		
Uncert:				+/-0.063						
TPU:				+/-0.105						
Batch 1502317										
QC1203379253 379487004 DUP										
Uranium-234		0.777		0.789	pCi/L	0.0397		(0-1)	HAKB	09/08/1517:43
Uncert:		+/-0.0535		+/-0.055						
TPU:		+/-0.0749		+/-0.0768						
Uranium-235/236	U	0.084	U	0.0837	pCi/L	0.0032		(0-1)		
Uncert:		+/-0.020		+/-0.0206						
TPU:		+/-0.0208		+/-0.0213						
Uranium-238		0.425		0.430	pCi/L	0.0253		(0-1)		
Uncert:		+/-0.0398		+/-0.0407						
TPU:		+/-0.0491		+/-0.0501						
**Uranium-232 Tracer	2.65	2.19		2.13	pCi/L		80.3	(50%-105%)		
Uncert:		+/-0.0983		+/-0.100						
TPU:		+/-0.204		+/-0.206						
QC1203379254 LCS										
Uranium-234				2.72	pCi/L				HAKB	09/08/1517:43
Uncert:				+/-0.107						
TPU:				+/-0.223						
Uranium-235/236				0.211	pCi/L					
Uncert:				+/-0.0335						
TPU:				+/-0.0368						
Uranium-238	2.72			2.98	pCi/L		110	(80%-120%)		
Uncert:				+/-0.111						
TPU:				+/-0.241						
**Uranium-232 Tracer	2.12			1.26	pCi/L		59.7	(50%-105%)		
Uncert:				+/-0.0945						
TPU:				+/-0.179						
QC1203379252 MB										
Uranium-234			U	0.054	pCi/L				HAKB	09/10/1514:46
Uncert:				+/-0.0129						
TPU:				+/-0.0134						
Uranium-235/236			U	0.0314	pCi/L					
Uncert:				+/-0.011						
TPU:				+/-0.0112						
Uranium-238			U	0.0169	pCi/L					
Uncert:				+/-0.00859						
TPU:				+/-0.00866						

QC Summary

Workorder: **379487**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Alpha Spec										
Batch 1502317										
**Uranium-232 Tracer	2.12			1.57	pCi/L		74.2	(50%-105%)		
	Uncert:			+/-0.0738						
	TPU:			+/-0.159						
Rad Gamma Spec										
Batch 1501923										
QC1203378218 379641008 DUP										
Cesium-137	U	1.07	U	-1.51	pCi/L	0.53		(0-1)	MJH1	09/04/1505:48
	Uncert:	+/-1.14		+/-1.23						
	TPU:	+/-1.17		+/-1.28						
Cobalt-60	U	-1.1	U	-0.421	pCi/L	0.136		(0-1)		
	Uncert:	+/-1.12		+/-1.34						
	TPU:	+/-1.15		+/-1.34						
Neptunium-237	U	0.587	U	-0.943	pCi/L	0.164		(0-1)		
	Uncert:	+/-2.22		+/-2.42						
	TPU:	+/-2.23		+/-2.43						
Potassium-40	U	21.0	U	-30.7	pCi/L	0.678		(0-1)		
	Uncert:	+/-20.3		+/-16.3						
	TPU:	+/-20.3		+/-17.8						
Sodium-22	U	0.509	U	2.02	pCi/L	0.291		(0-1)		
	Uncert:	+/-1.12		+/-1.38						
	TPU:	+/-1.13		+/-1.46						
QC1203378219 LCS										
Americium-241	34400			36400	pCi/L		106	(80%-120%)	MJH1	09/04/1505:49
	Uncert:			+/-641						
	TPU:			+/-2220						
Cesium-137	13700			14300	pCi/L		105	(80%-120%)		
	Uncert:			+/-234						
	TPU:			+/-677						
Cobalt-60	15000			15500	pCi/L		103	(80%-120%)		
	Uncert:			+/-275						
	TPU:			+/-673						
Neptunium-237			U	337	pCi/L					
	Uncert:			+/-142						
	TPU:			+/-163						
Potassium-40			U	-177	pCi/L					
	Uncert:			+/-179						
	TPU:			+/-184						
Sodium-22			U	8.83	pCi/L					
	Uncert:			+/-36.6						
	TPU:			+/-36.6						
QC1203378217 MB										
Cesium-137			U	0.158	pCi/L				MJH1	09/03/1515:21
	Uncert:			+/-1.50						
	TPU:			+/-1.50						
Cobalt-60			U	0.215	pCi/L					
	Uncert:			+/-1.38						

QC Summary

Workorder: **379487**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gamma Spec										
Batch 1501923										
	TPU:			+/-1.39						
Neptunium-237			U	-4.73	pCi/L					
	Uncert:			+/-2.97						
	TPU:			+/-3.17						
Potassium-40			U	-6.54	pCi/L					
	Uncert:			+/-20.7						
	TPU:			+/-20.7						
Sodium-22			U	-2.47	pCi/L					
	Uncert:			+/-1.19						
	TPU:			+/-1.32						
Rad Gas Flow										
Batch 1504241										
QC1203384414 379866002 DUP										
Strontium-90		5.47		5.46	pCi/L	0.00245		(0-1)	KSD1	09/14/1508:30
	Uncert:	+/-0.381		+/-0.371						
	TPU:	+/-0.583		+/-0.572						
**Strontium Carrier	8.10	7.30		7.50	mg		92.6	(50%-105%)		
QC1203384416 LCS										
Strontium-90	21.7			21.0	pCi/L		96.7	(80%-120%)	KSD1	09/09/1517:56
	Uncert:			+/-0.641						
	TPU:			+/-1.87						
**Strontium Carrier	8.10			7.70	mg		95.1	(50%-105%)		
QC1203384413 MB										
Strontium-90			U	0.0132	pCi/L				KSD1	09/09/1519:36
	Uncert:			+/-0.0637						
	TPU:			+/-0.0637						
**Strontium Carrier	8.10			7.40	mg		91.4	(50%-105%)		
QC1203384415 379866002 MS										
Strontium-90	218	5.47		229	pCi/L		103	(75%-125%)	KSD1	09/09/1517:56
	Uncert:	+/-0.381		+/-6.68						
	TPU:	+/-0.583		+/-19.9						
**Strontium Carrier	8.10	7.30		7.60	mg		93.8	(50%-105%)		
Batch 1504242										
QC1203384418 379641008 DUP										
Alpha	U	1.08	U	-1.1	pCi/L	0.764		(0-1)	JXB7	09/11/1507:28
	Uncert:	+/-0.832		+/-0.587						
	TPU:	+/-0.837		+/-0.587						
Beta	U	1.14	U	-1.22	pCi/L	0.801		(0-1)		09/09/1511:36
	Uncert:	+/-0.823		+/-0.638						
	TPU:	+/-0.831		+/-0.638						
QC1203384421 LCS										
Alpha	12.0			14.4	pCi/L		120	(80%-120%)	JXB7	09/11/1507:28
	Uncert:			+/-0.674						
	TPU:			+/-1.38						
Beta	43.5			51.2	pCi/L		118	(80%-120%)		09/10/1512:49

QC Summary

Workorder: **379487**

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date Time
Rad Gas Flow										
Batch 1504242										
	Uncert:			+/-0.681						
	TPU:			+/-4.33						
QC1203384417 MB										
Alpha			U	0.0361	pCi/L				JXB7	09/11/1507:27
	Uncert:			+/-0.110						
	TPU:			+/-0.110						
Beta			U	0.0874	pCi/L					09/09/1511:54
	Uncert:			+/-0.0963						
	TPU:			+/-0.0966						
QC1203384419 379641008 MS										
Alpha	240	U	1.08	276	pCi/L		115	(75%-125%)	JXB7	09/11/1507:28
	Uncert:		+/-0.832	+/-13.5						
	TPU:		+/-0.837	+/-26.8						
Beta	870	U	1.14	1010	pCi/L		116	(75%-125%)		09/10/1512:49
	Uncert:		+/-0.823	+/-13.8						
	TPU:		+/-0.831	+/-86.0						
QC1203384420 379641008 MSD										
Alpha	240	U	1.08	256	pCi/L	0.194	107	(0-1)	JXB7	09/11/1507:28
	Uncert:		+/-0.832	+/-13.1						
	TPU:		+/-0.837	+/-25.3						
Beta	870	U	1.14	1020	pCi/L	0.0181	117	(0-1)		09/09/1511:32
	Uncert:		+/-0.823	+/-18.8						
	TPU:		+/-0.831	+/-86.8						

Notes:

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

The Qualifiers in this report are defined as follows:

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

QC Summary

Workorder: **379487**

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 acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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