

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

General Engineering																							
Charleston SC																							
COC/Lab Request #:																							
2017-1476																							
Page 1 of 1																							
Chain of Custody/Analysis Request																							
Client Contact:			Lab Agreement #:			Site Name: Los Alamos National Laboratory																	
Project Number: ADEP			MSGP-Hg WSP-8260B-VOA WSP-8270C-SVOA WSP-All Metals WSP-CN(T) WSP-GENINORG+PerChlorate WSP-NH3+NO3/NO2+PO4 WSP-TKN+TOC			Rad Screening Info: 																	
Analysis Turnaround Time:																							
24 Hour - <input type="checkbox"/> Other - <input checked="" type="checkbox"/>																							
7 Days - <input type="checkbox"/>																							
14 Days - <input type="checkbox"/>																							
21 Days - <input type="checkbox"/>																							
28 Days - <input checked="" type="checkbox"/>																							
Field Sample ID			Sample Date			Sample Time			Sample Matrix														
CAMO-17-132216	May 3 2017	12:24	W				1		1	1													
CAMO-17-132236	May 3 2017	12:24	W	1	2	2		1			1												
CAMO-17-132303	May 3 2017	12:24	W		X																		
CAMO-17-132306	May 3 2017	12:24	W		2	2																	
CASA-17-132325	May 3 2017	10:33	W				1		1	1													
CASA-17-132334	May 3 2017	10:33	W	1				1			1												
CASA-17-132337	May 3 2017	10:33	W	1				1			1												
CASA-17-132338	May 3 2017	10:33	W				1		1	1													
Special Instructions:																							
Relinquished by:				Print Name: Melissa Montoya				Date/Time: 5/3/17 3:00				Received by:				Print Name:				Date/Time:			
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: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132216

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-03-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:24		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-60		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:	1		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
1	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE	1	1
1	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	1	1

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction _____ pH _____ Specific _____
 Potential _____ Turbidity _____ Conductance _____
 Temperature _____

COLLECTED BY (PRINT):

W. Pryce, A. Vigil

RELINQUISHED BY (Printed Name) ANDREW VIGIL (Signature) Andrew Vigil	Date/Time 05/03/2017 1310	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/3/17 1310
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132236

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-03-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:24		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-60		FIELD PREP:	UF	
LOCATION TYPE:	NA		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	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	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-LL-H-3	1 LITER POLY	1	NONE		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

≥10 mph wind during sampling; sampled ≥ 50' upwind of running diesel generator

LOCATION COMMENTS:

above

FIELD PARAMETERS:

Sample Time	12:24	HH:MM	Dissolved Oxygen	5.99	Flow (in gpm)	2.75
Oxidation-Reduction Potential	85.5		pH	8.25	Specific Conductance	126.5
Temperature	24.0		Turbidity	2.79		

COLLECTED BY (PRINT): W. Pryce, A. Vigil

RELINQUISHED BY (Printed Name) ANDREW VIGIL (Signature) <i>Andrew Vigil</i>	Date/Time 05/03/2017 1310	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>S. Sherwood</i>	Date/Time 5/3/17 1310
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Date/Time

Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132303

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-03-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:24		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-60		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	
TOP DEPTH:	1		SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

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

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Vigil, W. Pryce

RELINQUISHED BY (Printed Name) ANDREW VIGIL (Signature) Andrew Vigil	Date/Time 05/03/2017 1310	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/3/17 1310
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132306

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-03-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:24		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-60		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	FB	
TOP DEPTH:			SAMPLE USAGE:	QC	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT):

A.V. g. l, W. Pryce

RELINQUISHED BY (Printed Name) ANDREW VIGIL (Signature) Andrew Vigil	Date/Time 05/03/2017 1310	RECEIVED BY (Printed Name) S. Sherwood (Signature) S. Sherwood	Date/Time 5/3/17 1310
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/25/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132325

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / <input checked="" type="radio"/> NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	A. Stanfield <i>[Signature]</i>	Date/Time 5/3/2017 1135	RECEIVED BY (Printed Name) (Signature)	Sherwood <i>[Signature]</i>	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132334

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	UF	
LOCATION TYPE:	OK		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	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-CN(T)	250 ML POLY	1	NAOH		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS: Sampled soft. from running diesel

LOCATION COMMENTS: Breezy while sampling

FIELD PARAMETERS:

Sample Time	10:33	HH:MM	Dissolved Oxygen	6.14	Flow (in gpm)	4.05
Oxidation-Reduction Potential	123.3		pH	8.20	Specific Conductance	173.4
Temperature	19.5		Turbidity	2.34		

COLLECTED BY (PRINT): A. Stanford

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 5/3/2017 1135	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/02/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132337

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	UF	
LOCATION TYPE:	OK		FIELD QC TYPE:	FD	
TOP DEPTH:	↓		SAMPLE USAGE:	QC	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / <input checked="" type="radio"/> NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	MA
↓	WSP-CN(T)	250 ML POLY	1	NAOH	↓	↓
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanford

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 05/03/2017 1135	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CASA-17-132338

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/03/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1033		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-67		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	FD	
TOP DEPTH:	↓		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / <u>NG</u> / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
MA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	MA
↓	WSP-CR52/53	1 LITER POLY	1	ICE	↓	↓
↓	WSP- GENINORG+PerChlorate	1 LITER POLY	1	ICE	↓	↓
↓	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
 Oxidation-Reduction Potential _____ pH _____ Specific Conductance _____
 Temperature _____ Turbidity _____

COLLECTED BY (PRINT): A. Stanford

RELINQUISHED BY (Printed Name) (Signature)	Allyn Stanford	Date/Time 05/03/2017 1135	RECEIVED BY (Printed Name) (Signature)	S. Sherwood	Date/Time 5/3/17 1135
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

DATA VALIDATION REPORT

Chain Of Custody No. 2017-1476

1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
422436	EPA:120.1	2	1			
422436	EPA:150.1	2	1			
422436	EPA:160.1	2	1			
422436	EPA:170.0	4	2	1	1	
422436	EPA:245.2	4	2			
422436	EPA:300.0	2	1			
422436	EPA:310.1	2	1			
422436	EPA:335.4	2	1			
422436	EPA:350.1	2	1			
422436	EPA:351.2	2	1			
422436	EPA:353.2	2	1			
422436	EPA:365.4	2	1			
422436	SM:A2340B	2	1			
422436	SW-846:6010C	2	1			
422436	SW-846:6020	2	1			
422436	SW-846:6850	2	1			
422436	SW-846:8260B	1		1	1	
422436	SW-846:8270D	1			1	
422436	SW-846:9060	2	1			

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
422436	EPA:120.1	1663499	1663499	2	1									1			1				
422436	EPA:150.1	1665849	1665849	2	1									1			1				
422436	EPA:160.1	1663153	1663153	2	1				1					1			1				
422436	EPA:170.0	NA	NA	4	2	1	1														
422436	EPA:245.2	1662863	1662854	4	2				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
422436	EPA:300.0	1662746	1662746	2	1				1					1			1				
422436	EPA:310.1	1665848	1665848	2	1					1				1			1				
422436	EPA:335.4	1661857	1661856	2	1				1	1				1			1				
422436	EPA:350.1	1661776	1661775	2	1				1	1				1			1				
422436	EPA:351.2	1662576	1662574	2	1				1	1				1			1				
422436	EPA:353.2	1661895	1661895	2	1				1					1			1				
422436	EPA:365.4	1662570	1662568	2	1				1	1				1			1				
422436	SM:A2340B	1669920	1669920	2	1																
422436	SW-846:6010C	1662457	1662456	2	1				1	1				1			1				
422436	SW-846:6020	1662480	1662479	2	1				1	1				1			1				
422436	SW-846:6850	1662828	1662825	2	1				1	1	1			1							
422436	SW-846:8260B	1665467	1665467	1		1	1		1					2							
422436	SW-846:8270D	1662355	1662354	1			1		1	1	1			1							
422436	SW-846:9060	1663112	1663112	2	1				1					1			1				

2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132216	1203785788	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1203785786	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-17-132216	1203791299	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1203791298	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-17-132216	1203784953	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:160.1	GENERAL CHEMISTRY	LCS	1203784950	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1203784949	MB	1	0	0	0
EPA:170.0	VOC	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132236	422436002	REG	1	0	0	0
EPA:170.0	VOC	CAMO-17-132303	422436003	FTB	1	0	0	0
EPA:170.0	VOC	CAMO-17-132306	422436004	FB	1	0	0	0
EPA:170.0	VOC	CASA-17-132325	422436005	REG	1	0	0	0
EPA:170.0	VOC	CASA-17-132334	422436006	REG	1	0	0	0
EPA:170.0	VOC	CASA-17-132337	422436007	FD	1	0	0	0
EPA:170.0	VOC	CASA-17-132338	422436008	FD	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132216	1203784147	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132216	1203784149	MS	0	0	1	0
EPA:245.2	INORGANIC	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:245.2	INORGANIC	CAMO-17-132236	422436002	REG	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132325	422436005	REG	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132334	422436006	REG	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132337	422436007	FD	1	0	0	0
EPA:245.2	INORGANIC	CASA-17-132338	422436008	FD	1	0	0	0
EPA:245.2	INORGANIC	LCS	1203784146	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1203784145	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CASA-17-132320	1203783870	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1203783869	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1203783868	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132216	1203791292	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132216	1203791295	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1203791289	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CAMO-17-132236	422436002	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CASA-17-132329	1203782269	DUP	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CASA-17-132329	1203782270	MS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	CASA-17-132334	422436006	REG	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	CASA-17-132337	422436007	FD	1	0	0	0
EPA:335.4	GENERAL CHEMISTRY	LCS	1203781591	LCS	0	0	1	0
EPA:335.4	GENERAL CHEMISTRY	MB	1203781590	MB	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132320	1203783330	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132320	1203783331	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1203781426	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1203781425	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAMO-17-132236	422436002	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132329	1203783405	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132329	1203783406	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132334	422436006	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CASA-17-132337	422436007	FD	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1203783402	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1203783401	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CASA-17-132320	1203783193	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1203781710	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1203781709	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAMO-17-132216	422436001	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132320	1203783390	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132320	1203783392	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132325	422436005	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CASA-17-132338	422436008	FD	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1203783388	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1203783387	MB	1	0	0	0
SM:A2340B	INORGANIC	CAMO-17-132216	422436001	REG	1	0	0	0
SM:A2340B	INORGANIC	CASA-17-132325	422436005	REG	1	0	0	0
SM:A2340B	INORGANIC	CASA-17-132338	422436008	FD	1	0	0	0
SW-846:6010C	INORGANIC	CAMO-17-132216	1203783052	DUP	17	0	0	0
SW-846:6010C	INORGANIC	CAMO-17-132216	1203783053	MS	0	0	17	0
SW-846:6010C	INORGANIC	CAMO-17-132216	422436001	REG	17	0	0	0
SW-846:6010C	INORGANIC	CASA-17-132325	422436005	REG	17	0	0	0
SW-846:6010C	INORGANIC	CASA-17-132338	422436008	FD	17	0	0	0
SW-846:6010C	INORGANIC	LCS	1203783051	LCS	0	0	17	0
SW-846:6010C	INORGANIC	MB	1203783050	MB	17	0	0	0
SW-846:6020	INORGANIC	CAMO-17-132216	1203783112	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAMO-17-132216	1203783113	MS	0	0	11	0
SW-846:6020	INORGANIC	CAMO-17-132216	422436001	REG	11	0	0	0
SW-846:6020	INORGANIC	CASA-17-132325	422436005	REG	11	0	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:6020	INORGANIC	CASA-17-132338	422436008	FD	11	0	0	0
SW-846:6020	INORGANIC	LCS	1203783111	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1203783110	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAMO-17-132216	422436001	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132320	1203784063	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132320	1203784064	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132325	422436005	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CASA-17-132338	422436008	FD	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1203784062	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1203784061	MB	1	0	0	0
SW-846:8260B	VOC	CAMO-17-132236	422436002	REG	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132303	422436003	FTB	80	3	0	0
SW-846:8260B	VOC	CAMO-17-132306	422436004	FB	80	3	0	0
SW-846:8260B	VOC	LCS	1203790474	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203790475	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203790473	MB	80	3	0	0
SW-846:8270D	SVOC	CAMO-17-132236	422436002	REG	80	6	0	0
SW-846:8270D	SVOC	CAMO-17-132306	1203783015	MS	0	6	76	0
SW-846:8270D	SVOC	CAMO-17-132306	1203783016	MSD	0	6	76	0
SW-846:8270D	SVOC	CAMO-17-132306	422436004	FB	80	6	0	0
SW-846:8270D	SVOC	LCS	1203782771	LCS	0	6	76	0
SW-846:8270D	SVOC	MB	1203782770	MB	80	6	0	0
SW-846:9060	GENERAL CHEMISTRY	CAMO-17-132236	422436002	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CASA-17-132329	1203784882	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CASA-17-132334	422436006	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CASA-17-132337	422436007	FD	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1203784881	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1203784880	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

DATA VALIDATION REPORT

Blank FS ID	Blank Lab Sample	Blank Type	Analytical Method	Sample	Parameter Name	Blank Lab Result	Lab Qualifier	Blank Lab Units	Blank Lab Detection Limit
MB	1203783401	METHOD BLANK	EPA:351.2	W	Total Kjeldahl Nitrogen	0.0517	J	mg/L	0.100
CAMO-17-132303	422436003	TRIP BLANK	EPA:170.0	W	Temperature	4		Deg C	
CAMO-17-132306	422436004	FIELD BLANK	EPA:170.0	W	Temperature	4		Deg C	

Field Sample ID	Blank Lab	Blank Type	Analytical Method	Parameter Name	Blank Lab Result	Blank Lab Units	Lab Result	Lab Qualifier	Lab Detection Limit	Detect Flag	Detect to Nondetect Factor	Detect to Estimated Factor	Use Factors
CAMO-17-132236	1203783401	METHOD BLANK	EPA:351.2	Total Kjeldahl Nitrogen	0.0517	mg/L	0.170		0.100	Y	5	100	Y

6. Any surrogate recoveries outside the control limits?

No.

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

No.

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

DATA VALIDATION REPORT

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-60	2017-1476	CAMO-17-132236	REG	INIT	GENERAL CHEMISTRY	EPA:351.2	Total Kjeldahl Nitrogen	U		I4	N	0.170	mg/L	0.170	mg/L			W	05/03/2017	1662576	VAL	Y	

Reason Code

Description

I4

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

J_LAB

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

NQ

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

U_LAB

The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-17-132216	R-60	REG	EPA:120.1	0	1
CAMO-17-132216	R-60	REG	EPA:150.1	0	1
CAMO-17-132216	R-60	REG	EPA:160.1	0	1
CAMO-17-132216	R-60	REG	EPA:170.0	0	1
CAMO-17-132216	R-60	REG	EPA:245.2	0	1
CAMO-17-132216	R-60	REG	EPA:300.0	0	4
CAMO-17-132216	R-60	REG	EPA:310.1	0	2

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAMO-17-132216	R-60	REG	EPA:350.1	0	1
CAMO-17-132216	R-60	REG	EPA:353.2	0	1
CAMO-17-132216	R-60	REG	EPA:365.4	0	1
CAMO-17-132216	R-60	REG	SM:A2340B	0	1
CAMO-17-132216	R-60	REG	SW-846:6010C	0	17
CAMO-17-132216	R-60	REG	SW-846:6020	0	11
CAMO-17-132216	R-60	REG	SW-846:6850	0	1
CAMO-17-132236	R-60	REG	EPA:170.0	0	1
CAMO-17-132236	R-60	REG	EPA:245.2	0	1
CAMO-17-132236	R-60	REG	EPA:335.4	0	1
CAMO-17-132236	R-60	REG	EPA:351.2	0	1
CAMO-17-132236	R-60	REG	SW-846:8260B	0	80
CAMO-17-132236	R-60	REG	SW-846:8270D	0	80
CAMO-17-132236	R-60	REG	SW-846:9060	0	1
CAMO-17-132303	R-60	FTB	EPA:170.0	0	1
CAMO-17-132303	R-60	FTB	SW-846:8260B	0	80
CAMO-17-132306	R-60	FB	EPA:170.0	0	1
CAMO-17-132306	R-60	FB	SW-846:8260B	0	80
CAMO-17-132306	R-60	FB	SW-846:8270D	0	80
CASA-17-132325	R-67	REG	EPA:120.1	0	1
CASA-17-132325	R-67	REG	EPA:150.1	0	1
CASA-17-132325	R-67	REG	EPA:160.1	0	1
CASA-17-132325	R-67	REG	EPA:170.0	0	1
CASA-17-132325	R-67	REG	EPA:245.2	0	1
CASA-17-132325	R-67	REG	EPA:300.0	0	4
CASA-17-132325	R-67	REG	EPA:310.1	0	2
CASA-17-132325	R-67	REG	EPA:350.1	0	1
CASA-17-132325	R-67	REG	EPA:353.2	0	1
CASA-17-132325	R-67	REG	EPA:365.4	0	1
CASA-17-132325	R-67	REG	SM:A2340B	0	1
CASA-17-132325	R-67	REG	SW-846:6010C	0	17
CASA-17-132325	R-67	REG	SW-846:6020	0	11
CASA-17-132325	R-67	REG	SW-846:6850	0	1
CASA-17-132334	R-67	REG	EPA:170.0	0	1
CASA-17-132334	R-67	REG	EPA:245.2	0	1
CASA-17-132334	R-67	REG	EPA:335.4	0	1
CASA-17-132334	R-67	REG	EPA:351.2	0	1

DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CASA-17-132334	R-67	REG	SW-846:9060	0	1
CASA-17-132337	R-67	FD	EPA:170.0	0	1
CASA-17-132337	R-67	FD	EPA:245.2	0	1
CASA-17-132337	R-67	FD	EPA:335.4	0	1
CASA-17-132337	R-67	FD	EPA:351.2	0	1
CASA-17-132337	R-67	FD	SW-846:9060	0	1
CASA-17-132338	R-67	FD	EPA:120.1	0	1
CASA-17-132338	R-67	FD	EPA:150.1	0	1
CASA-17-132338	R-67	FD	EPA:160.1	0	1
CASA-17-132338	R-67	FD	EPA:170.0	0	1
CASA-17-132338	R-67	FD	EPA:245.2	0	1
CASA-17-132338	R-67	FD	EPA:300.0	0	4
CASA-17-132338	R-67	FD	EPA:310.1	0	2
CASA-17-132338	R-67	FD	EPA:350.1	0	1
CASA-17-132338	R-67	FD	EPA:353.2	0	1
CASA-17-132338	R-67	FD	EPA:365.4	0	1
CASA-17-132338	R-67	FD	SM:A2340B	0	1
CASA-17-132338	R-67	FD	SW-846:6010C	0	17
CASA-17-132338	R-67	FD	SW-846:6020	0	11
CASA-17-132338	R-67	FD	SW-846:6850	0	1

May 26, 2017

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

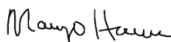
Re: LANL- WQH Water Samples
Work Order: 422436
SDG: 2017-1476

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 05, 2017, and analyzed for GC/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS. 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,


Margo Herron for
Valerie Davis
Project Manager

Chain of Custody: 2017-1476
Enclosures



ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Work Order #: 422436
SDG: 2017-1476

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Case Narrative

**Case Narrative for
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)
LANL- WQH Water Samples
Workorder #: 422436
SDG # : 2017-1476**

May 26, 2017

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 May 05, 2017 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:

<u>Laboratory ID</u>	<u>Client ID</u>
422436001	CAMO-17-132216
422436002	CAMO-17-132236
422436003	CAMO-17-132303
422436004	CAMO-17-132306
422436005	CAMO-17-132325
422436006	CAMO-17-132334
422436007	CAMO-17-132337
422436008	CAMO-17-132338

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/MS Semivolatile, GC/MS Volatile, General Chemistry, Metals and Perchlorates by LCMSMS.

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.

Margo Herron
Margo Herron for
Valerie Davis
Project Manager

List of current GEL Certifications as of 26 May 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
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	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Chain of Custody and Supporting Documentation



SAMPLE RECEIPT & REVIEW FORM

Client: <u>ESH</u>		SDG/AR/COC/Work Order: <u>420406</u>	
Received By: <u>ZKW</u>		Date Received: <u>5/5/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>5908 1782 0356 - 4°C</u> <u>5908 1782 0370 - 3°C</u> <u>5908 1782 0367 - 3°C</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <input checked="" type="checkbox"/> CPM /mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>See Above</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes _____ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes _____ No <input checked="" type="checkbox"/> N/A _____ (If unknown, select No) VOA vials free of headspace? Yes <input checked="" type="checkbox"/> No _____ N/A _____ Sample ID's and containers affected:
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's affected: <u>We only rec'd one Ziplock bag for -133054</u>
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):
*We rec'd 2 TSS Containers and 1 NPDES-P Container for Sample NP199-17-132577 Collected 5/3/17 @ 15:10 not on any COC's

PM (or PMA) review: Initials

Melt

Date

5/5/17

Page

1 of 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: 04MAY17
ACTWGT: 47.0 LB MAN
CAD: 0014176/CAFE2916

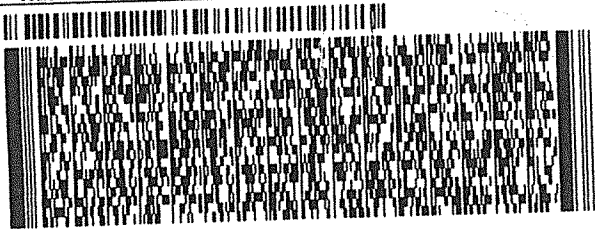
BILL SENDER

0 VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWEO



FedEx
Express



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: 04MAY17
ACTWGT: 48.0 LB MAN
CAD: 0014176/CAFE2916

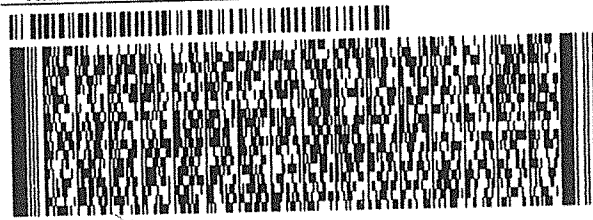
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: P2060ACFD22G400017



FedEx
Express



2 of 2
MPS# 5908 1782 0367
0269
Mstr# 5908 1782 0356

FRI - 05 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS

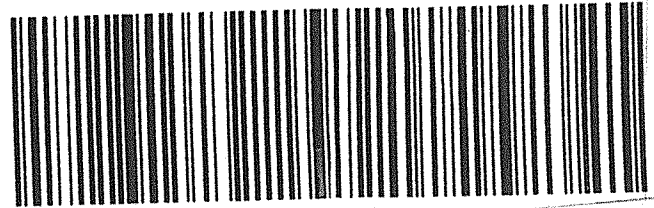


TRK# 5908 1782 0378
0201

FRI - 05 MAY 10:30A
PRIORITY OVERNIGHT

X7 RBWA

29407
SC-US CHS



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: 04MAY17
ACTWGT: 54.0 LB MAN
CAD: 0014176/CAFE2916

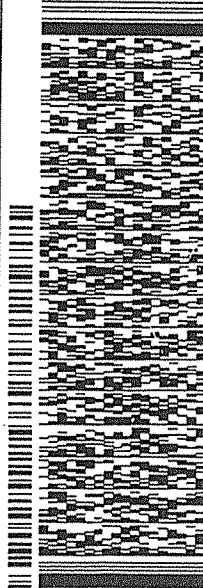
BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

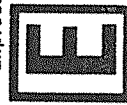
CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWEO



FedEx
Express

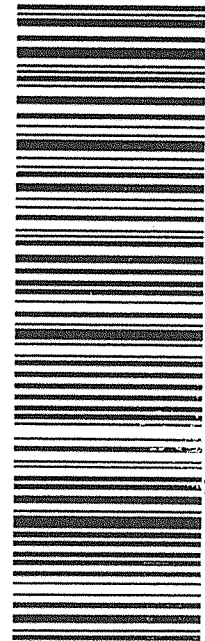


FRI - 05 MAY 10:30A
PRIORITY OVERNIGHT

1 of 2
TRK# 5908 1782 0356
0201
MASTER

X7 RBWA

29407
SC-US CHS



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 #: 2017-1476
Work Order #: 422436**

Method/Analysis Information

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

Analytical Method: SW-846:8260B

Analytical Batch
Number: 1665467

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
422436002	CAMO-17-132236
422436003	CAMO-17-132303
422436004	CAMO-17-132306
1203790473	Method Blank (MB)
1203790474	Laboratory Control Sample (LCS)
1203790475	Laboratory Control Sample (LCS)
1203790476	422436002(CAMO-17-132236) Post Spike (PS)
1203790477	422436002(CAMO-17-132236) Post Spike (PS)
1203790478	422436002(CAMO-17-132236) Post Spike Duplicate (PSD)
1203790479	422436002(CAMO-17-132236) 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# 25.

Calibration Information

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

Initial Calibration

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

Continuing Calibration Verification Requirements

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

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

The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 422436002 (CAMO-17-132236) was 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 reports (DERs) was not generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

Manual Integrations

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

TIC Comment

Tentatively identified compounds (TIC) were not required for this SDG.

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.

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 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	Hewlett Packard 5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	RTX-624	Restek, 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: 2017-1476 GEL Work Order: 422436

The Qualifiers in this report are defined as follows:

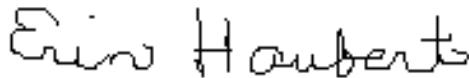
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.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

Review/Validation

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

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

Signature:



Name: Erin Haubert

Date: 31 MAY 2017

Title: Data Validator

Sample Data Summary

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132236

Batch ID: 1665467

Run Date: 05/16/2017 12:39

Prep Date: 05/16/2017 12:39

Data File: 051617V1\11208.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132236

Batch ID: 1665467

Run Date: 05/16/2017 12:39

Prep Date: 05/16/2017 12:39

Data File: 051617V1\11208.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Client ID: CAMO-17-132236

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 12:39

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 12:39

Column: DB-624

Data File: 051617V1\11208.D

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.1	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	50.6	50.0	ug/L 101	(70%-131%)
Toluene-d8	52.1	50.0	ug/L 104	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	13	ug/L	0	J

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476

Lab Sample ID: 422436003

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132303

Batch ID: 1665467

Run Date: 05/16/2017 13:08

Prep Date: 05/16/2017 13:08

Data File: 051617V1\11209.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 422436003

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132303

Batch ID: 1665467

Run Date: 05/16/2017 13:08

Prep Date: 05/16/2017 13:08

Data File: 051617V1\11209.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476
Lab Sample ID: 422436003

Client ID: CAMO-17-132303
Batch ID: 1665467
Run Date: 05/16/2017 13:08
Prep Date: 05/16/2017 13:08
Data File: 051617V1\11209.D

Date Collected: 05/03/2017 12:24
Date Received: 05/05/2017 09:25
Client: ARSL004
Method: SW-846:8260B
Inst: VOA1.I
Analyst: VXY1

Column: DB-624

Matrix: W

Project: ESHL00114
SOP Ref: GL-OA-E-038
Dilution: 1
Purge Vol: 5 mL

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.2	50.0	ug/L 106	(71%-134%)
Bromofluorobenzene	51.0	50.0	ug/L 102	(70%-131%)
Toluene-d8	51.8	50.0	ug/L 104	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	49.3	ug/L	0	J

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132306

Batch ID: 1665467

Run Date: 05/16/2017 13:37

Prep Date: 05/16/2017 13:37

Data File: 051617V1\11210.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132306

Batch ID: 1665467

Run Date: 05/16/2017 13:37

Prep Date: 05/16/2017 13:37

Data File: 051617V1\11210.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1665467

Inst: VOA1.I

Dilution: 1

Run Date: 05/16/2017 13:37

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 05/16/2017 13:37

Data File: 051617V1\11210.D

Column: DB-624

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

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.1	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	51.1	50.0	ug/L 102	(70%-131%)
Toluene-d8	52.5	50.0	ug/L 105	(74%-124%)

Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	22.6	ug/L	0	J

Quality Control Summary

Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1476**Matrix Type: LIQUID**

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203790474	LCS for batch 1665467	99	101	94
1203790475	LCS for batch 1665467	100	103	95
1203790473	MB for batch 1665467	102	104	99
422436002	CAMO-17-132236	108	104	101
422436003	CAMO-17-132303	106	104	102
422436004	CAMO-17-132306	108	105	102
1203790476	CAMO-17-132236PS	109	106	97
1203790478	CAMO-17-132236PSD	105	108	97
1203790477	CAMO-17-132236PS	102	107	97
1203790479	CAMO-17-132236PSD	105	107	98

Surrogate**Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4

(71%-134%)

TOL = Toluene-d8

(74%-124%)

BFB = Bromofluorobenzene

(70%-131%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	104	104	71-127
75-05-8	LCS Acetonitrile	1250	0.0	972	78	61-125
67-64-1	LCS Acetone	250	0.0	320	128	48-157
74-88-4	LCS Iodomethane	250	0.0	223	89	72-128
75-15-0	LCS Carbon disulfide	250	0.0	225	90	69-138
108-05-4	LCS Vinyl acetate	250	0.0	208	83	67-125
78-93-3	LCS 2-Butanone	250	0.0	299	120	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	238	95	66-124
591-78-6	LCS 2-Hexanone	250	0.0	332	133	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	48.2	96	40-160
74-87-3	LCS Chloromethane	50.0	0.0	39.0	78	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	43.2	86	65-137
74-83-9	LCS Bromomethane	50.0	0.0	47.1	94	63-137
75-00-3	LCS Chloroethane	50.0	0.0	44.3	89	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	48.1	96	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	42.8	86	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	45.8	92	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	38.3	77	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	48.5	97	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	45.5	91	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	44.7	89	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	45.3	91	75-123

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	51.7	103	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	43.7	87	76-125
67-66-3	LCS Chloroform	50.0	0.0	44.5	89	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	48.6	97	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	48.4	97	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	49.5	99	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	42.0	84	74-122
71-43-2	LCS Benzene	50.0	0.0	43.8	88	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	47.0	94	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	43.2	86	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	42.9	86	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	45.4	91	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	42.8	86	78-131
108-88-3	LCS Toluene	50.0	0.0	49.0	98	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	48.9	98	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	46.7	93	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	47.8	96	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	54.4	109	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	52.2	104	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	49.3	99	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	48.4	97	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	51.8	104	73-125

Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	52.7	105	74-126
100-42-5	LCS Styrene	50.0	0.0	51.9	104	72-130
75-25-2	LCS Bromoform	50.0	0.0	53.9	108	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	56.5	113	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	46.2	92	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	50.3	101	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	50.9	102	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	51.9	104	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	53.8	108	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	54.0	108	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	51.1	102	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	58.2	116	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	53.6	107	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	56.5	113	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	56.7	113	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	50.2	100	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	49.6	99	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	57.6	115	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	46.0	92	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	59.6	119	72-136
91-20-3	LCS Naphthalene	50.0	0.0	51.6	103	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	59.7	119	70-130

Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790474

Instrument: VOA1.I

Analysis Date: 05/16/2017 10:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	61.1	122	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	52.2	104	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	50.8	102	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5240	105	63-138

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1665467

Matrix: WATER

Lab Sample ID 1203790475

Instrument: VOA1.I

Analysis Date: 05/16/2017 11:13

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	242	97	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	212	85	61-148
107-05-1	LCS Allyl chloride	250	0.0	208	83	59-125
107-13-1	LCS Acrylonitrile	250	0.0	196	79	65-122
107-12-0	LCS Propionitrile	250	0.0	198	79	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	201	80	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	211	84	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	227	91	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2080	83	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	43.5	87	66-147

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	100	100	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	990	79	56-131
67-64-1	PS Acetone	250	0.00 U	141	56	25-155
74-88-4	PS Iodomethane	250	0.00 U	228	91	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	208	83	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	226	90	48-133
78-93-3	PS 2-Butanone	250	0.00 U	177	71	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	244	98	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	234	94	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	30.0	60	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	32.7	65	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	35.9	72	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	47.4	95	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	40.2	80	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	44.6	89	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	47.1	94	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	41.6	83	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	39.3	79	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	49.0	98	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	44.1	88	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	44.4	89	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	46.4	93	69-127

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1476

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	48.6	97	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	47.4	95	71-130
67-66-3	PS Chloroform	50.0	0.00 U	46.5	93	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	47.0	94	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	44.5	89	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	47.7	95	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	47.6	95	69-130
71-43-2	PS Benzene	50.0	0.00 U	42.6	85	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	45.6	91	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	44.0	88	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	47.3	95	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	49.4	99	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	43.9	88	70-134
108-88-3	PS Toluene	50.0	0.00 U	47.4	95	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	51.4	103	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	50.5	101	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	50.9	102	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	49.5	99	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	58.1	116	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	54.7	109	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	48.9	98	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	50.0	100	61-130

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	PS o-Xylene	50.0	0.00 U	52.4	105	62-131
100-42-5	PS Styrene	50.0	0.00 U	52.8	106	59-135
75-25-2	PS Bromoform	50.0	0.00 U	60.8	122	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	54.0	108	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	50.6	101	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	56.3	113	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	53.4	107	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	49.8	100	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	52.8	106	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	53.6	107	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	50.9	102	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	55.9	112	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	53.7	107	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	54.2	108	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	54.3	109	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	51.3	103	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	50.7	101	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	53.6	107	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	52.1	104	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	56.0	112	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	53.5	107	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	57.5	115	52-135

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790476

Instrument: VOA1.I

Analysis Date: 05/16/2017 19:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	58.2	116	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	55.6	111	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	52.7	105	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	5290	106	60-140

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	101	101	59-132	1	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	944	76	56-131	5	0-20
67-64-1	PSD Acetone	250	0.00 U	133	53	25-155	6	0-20
74-88-4	PSD Iodomethane	250	0.00 U	225	90	66-133	1	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	205	82	61-141	1	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	218	87	48-133	4	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	165	66	25-143	7	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	237	95	61-127	3	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	223	89	33-138	5	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	29.2	58	33-164	3	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	31.5	63	53-139	4	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	34.9	70	58-140	3	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	46.9	94	59-146	1	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	40.3	81	65-129	0	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	43.8	88	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	46.0	92	69-127	2	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	41.0	82	59-130	1	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	38.9	78	62-123	1	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	47.8	96	69-132	2	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	43.3	87	65-127	2	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	43.7	87	67-127	1	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	45.6	91	69-127	2	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	47.6	95	66-137	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	46.7	93	71-130	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	45.7	91	71-129	2	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	46.3	93	69-139	2	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	43.6	87	67-130	2	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	46.7	93	66-143	2	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	46.3	93	69-130	3	0-20
71-43-2	PSD Benzene	50.0	0.00 U	42.2	84	66-125	1	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	45.1	90	65-131	1	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	43.6	87	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	46.3	93	72-129	2	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	48.7	97	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	43.7	87	70-134	0	0-20
108-88-3	PSD Toluene	50.0	0.00 U	48.1	96	60-126	1	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	51.1	102	69-135	1	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	49.5	99	66-125	2	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	50.5	101	67-124	1	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	50.2	100	60-130	1	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	57.4	115	68-143	1	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	53.6	107	71-127	2	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	49.1	98	64-124	0	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	50.4	101	61-130	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

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SDG Number: 2017-1476

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-47-6	PSD o-Xylene	50.0	0.00 U	52.1	104	62-131	0	0-20
100-42-5	PSD Styrene	50.0	0.00 U	52.5	105	59-135	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	58.8	118	64-138	3	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	53.5	107	55-133	1	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	49.4	99	62-129	2	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	53.2	106	70-124	6	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	52.8	106	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	49.5	99	50-133	1	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	52.8	106	53-135	0	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	53.8	108	56-128	0	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	51.0	102	53-130	0	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	55.0	110	55-135	2	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	52.5	105	53-132	2	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	52.5	105	50-138	3	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	52.6	105	49-138	3	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	50.4	101	56-126	2	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	50.1	100	55-125	1	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	52.5	105	43-142	2	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	49.2	98	62-141	6	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	50.2	100	40-147	11	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	51.7	103	62-134	3	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	56.9	114	52-135	1	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-1476

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790478

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:19

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	56.5	113	50-133	3	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	55.6	111	71-133	0	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	52.8	106	60-125	0	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4900	98	60-140	8	0-20

Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-1476

Sample Type: Post Spike

Client ID: CAMO-17-132236PS

Matrix: W

Lab Sample ID 1203790477

Instrument: VOA1.I

Analysis Date: 05/16/2017 20:48

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

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	233	93	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	203	81	57-149
107-05-1	PS Allyl chloride	250	0.00 U	213	85	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	204	82	59-129
107-12-0	PS Propionitrile	250	0.00 U	212	85	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	212	85	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	225	90	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	242	97	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2220	89	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	42.2	84	63-146

Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-1476

Sample Type: Post Spike Duplicate

Client ID: CAMO-17-132236PSD

Matrix: W

Lab Sample ID 1203790479

Instrument: VOA1.I

Analysis Date: 05/16/2017 21:17

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1665467

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00	U	232	93	49-141	1	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00	U	198	79	57-149	3	0-20
107-05-1	PSD Allyl chloride	250	0.00	U	208	83	54-128	3	0-20
107-13-1	PSD Acrylonitrile	250	0.00	U	198	79	59-129	3	0-20
107-12-0	PSD Propionitrile	250	0.00	U	202	81	58-131	5	0-20
126-98-7	PSD Methacrylonitrile	250	0.00	U	209	84	59-134	1	0-20
80-62-6	PSD Methyl methacrylate	250	0.00	U	220	88	62-135	2	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00	U	242	97	60-136	0	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00	U	2100	84	60-143	6	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00	U	42.1	84	63-146	0	0-20

Method Blank Summary

Page 1 of 1

SDG Number:	2017-1476	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1665467	Instrument ID:	VOA1.I	Data File:	051617V1\1I206BA.D
Lab Sample ID:	1203790473	Prep Date:	05/16/2017 11:41	Analyzed:	05/16/17 11:41
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 1665467	1203790474	051617V1\1I203LA.D	05/16/17	1015
02 LCS for batch 1665467	1203790475	051617V1\1I205LA.D	05/16/17	1113
03 CAMO-17-132236	422436002	051617V1\1I208.D	05/16/17	1239
04 CAMO-17-132303	422436003	051617V1\1I209.D	05/16/17	1308
05 CAMO-17-132306	422436004	051617V1\1I210.D	05/16/17	1337
06 CAMO-17-132236PS	1203790476	051617V1\1I223.D	05/16/17	1950
07 CAMO-17-132236PSD	1203790478	051617V1\1I224.D	05/16/17	2019
08 CAMO-17-132236PS	1203790477	051617V1\1I225.D	05/16/17	2048
09 CAMO-17-132236PSD	1203790479	051617V1\1I226.D	05/16/17	2117

Quality Control Data

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476

Lab Sample ID: 1203790473

Client Sample: QC for batch 1665467

Client ID: MB for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:41

Prep Date: 05/16/2017 11:41

Data File: 051617V1\11206BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476		Matrix:	WATER
Lab Sample ID: 1203790473			
Client Sample: QC for batch 1665467	Client: ARSL004	Project:	QC
Client ID: MB for batch 1665467	Method: SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution:	1
Run Date: 05/16/2017 11:41	Analyst: VXY1	Purge Vol:	5 mL
Prep Date: 05/16/2017 11:41			
Data File: 051617V1\11206BA.D	Column: DB-624		

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

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number: 2017-1476	Matrix: WATER
Lab Sample ID: 1203790473	
Client Sample: QC for batch 1665467	Client: ARSL004
Client ID: MB for batch 1665467	Method: SW-846:8260B
Batch ID: 1665467	Project: QC
Run Date: 05/16/2017 11:41	SOP Ref: GL-OA-E-038
Prep Date: 05/16/2017 11:41	Dilution: 1
Data File: 051617V1\1I206BA.D	Purge Vol: 5 mL
	Analyst: VXY1
	Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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	50.9	50.0	ug/L 102	(71%-134%)
Bromofluorobenzene	49.5	50.0	ug/L 99	(70%-131%)
Toluene-d8	51.9	50.0	ug/L 104	(74%-124%)

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: 2017-1476

Lab Sample ID: 1203790474

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 10:15

Prep Date: 05/16/2017 10:15

Data File: 051617V1\11203LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		52.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		48.6	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		46.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		46.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		45.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		48.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		59.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		50.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		61.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		53.6	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		46.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		49.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		50.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		42.0	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.2	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		53.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.2	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		47.8	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		49.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		51.7	ug/L	0.300	1.00
78-93-3	2-Butanone		299	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		54.0	ug/L	0.300	1.00
591-78-6	2-Hexanone		332	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		56.7	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		238	ug/L	1.50	5.00
67-64-1	Acetone		320	ug/L	1.50	10.0
75-05-8	Acetonitrile		972	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		43.8	ug/L	0.300	1.00
108-86-1	Bromobenzene		50.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		43.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		45.4	ug/L	0.300	1.00
75-25-2	Bromoform		53.9	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 1203790474

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 10:15

Prep Date: 05/16/2017 10:15

Data File: 051617V1\11203LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		47.1	ug/L	0.300	1.00
75-15-0	Carbon disulfide		225	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		49.5	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.4	ug/L	0.300	1.00
75-00-3	Chloroethane		44.3	ug/L	0.300	1.00
67-66-3	Chloroform		44.5	ug/L	0.300	1.00
74-87-3	Chloromethane		39.0	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		52.2	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		48.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		42.8	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		51.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		59.6	ug/L	0.300	1.00
74-88-4	Iodomethane		223	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		56.5	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		38.3	ug/L	1.00	10.0
91-20-3	Naphthalene		51.6	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		51.9	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		54.4	ug/L	0.300	1.00
108-88-3	Toluene		49.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		47.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		48.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		208	ug/L	1.50	5.00
75-01-4	Vinyl chloride		43.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		45.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		42.8	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		104	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5240	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		57.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		51.9	ug/L	0.300	1.00
95-47-6	o-Xylene		52.7	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		56.5	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

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SDG Number:	2017-1476	Matrix:	WATER
Lab Sample ID:	1203790474		
Client Sample:	QC for batch 1665467	Client:	ARSL004
Client ID:	LCS for batch 1665467	Method:	SW-846:8260B
Batch ID:	1665467	Inst:	VOA1.I
Run Date:	05/16/2017 10:15	Analyst:	VXY1
Prep Date:	05/16/2017 10:15		
Data File:	051617V1\11203LA.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		48.5	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		58.2	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		45.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		48.9	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.3	50.0	99	(71%-134%)
Bromofluorobenzene	47.1	50.0	94	(70%-131%)
Toluene-d8	50.4	50.0	101	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 1203790475

Client Sample: QC for batch 1665467

Client ID: LCS for batch 1665467

Batch ID: 1665467

Run Date: 05/16/2017 11:13

Prep Date: 05/16/2017 11:13

Data File: 051617V1\11205LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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		43.5	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		242	ug/L	1.50	5.00
107-13-1	Acrylonitrile		196	ug/L	1.50	5.00
107-05-1	Allyl chloride		208	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

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1476	Matrix:	WATER
Lab Sample ID:	1203790475		
Client Sample:	QC for batch 1665467	Client:	ARSL004
Client ID:	LCS for batch 1665467	Method:	SW-846:8260B
Batch ID:	1665467	Inst:	VOA1.I
Run Date:	05/16/2017 11:13	Analyst:	VXY1
Prep Date:	05/16/2017 11:13		
Data File:	051617V1\11205LA.D	Column:	DB-624
		Project:	QC
		SOP Ref:	GL-OA-E-038
		Dilution:	1
		Purge Vol:	5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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		227	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		2080	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		201	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		211	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		198	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		212	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

**Volatile
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Sample Summary**

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SDG Number:	2017-1476	Matrix:	WATER
Lab Sample ID:	1203790475		
Client Sample:	QC for batch 1665467	Client:	ARSL004
Client ID:	LCS for batch 1665467	Method:	SW-846:8260B
Batch ID:	1665467	Inst:	VOA1.I
Run Date:	05/16/2017 11:13	Analyst:	VXY1
Prep Date:	05/16/2017 11:13		
Data File:	051617V1\1I205LA.D	Column:	DB-624

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

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	49.9	50.0	ug/L	100	(71%-134%)
Bromofluorobenzene	47.7	50.0	ug/L	95	(70%-131%)
Toluene-d8	51.6	50.0	ug/L	103	(74%-124%)

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1476	Date Collected:	05/03/2017 12:24	Matrix:	W
Lab Sample ID:	1203790476	Date Received:	05/05/2017 09:25		
Client Sample:	QC for batch 1665467	Client:	ARSL004	Project:	QC
Client ID:	CAMO-17-132236PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1665467	Inst:	VOA1.I	Dilution:	1
Run Date:	05/16/2017 19:50	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	05/16/2017 19:50				
Data File:	051617V1\11223.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		47.0	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		50.6	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		50.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.4	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.6	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		44.5	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		57.5	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		56.3	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		58.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		53.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.1	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		54.7	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.6	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		44.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		51.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		50.9	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		50.7	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		48.6	ug/L	0.300	1.00
78-93-3	2-Butanone		177	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		53.6	ug/L	0.300	1.00
591-78-6	2-Hexanone		234	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		50.9	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		54.3	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		244	ug/L	1.50	5.00
67-64-1	Acetone		141	ug/L	1.50	10.0
75-05-8	Acetonitrile		990	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		42.6	ug/L	0.300	1.00
108-86-1	Bromobenzene		53.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.4	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		49.4	ug/L	0.300	1.00
75-25-2	Bromoform		60.8	ug/L	0.300	1.00

**Volatile
Certificate of Analysis
Sample Summary**

SDG Number:	2017-1476	Date Collected:	05/03/2017 12:24	Matrix:	W
Lab Sample ID:	1203790476	Date Received:	05/05/2017 09:25		
Client Sample:	QC for batch 1665467	Client:	ARSL004	Project:	QC
Client ID:	CAMO-17-132236PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1665467	Inst:	VOA1.I	Dilution:	1
Run Date:	05/16/2017 19:50	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	05/16/2017 19:50				
Data File:	051617V1\11223.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		47.4	ug/L	0.300	1.00
75-15-0	Carbon disulfide		208	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		47.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		48.9	ug/L	0.300	1.00
75-00-3	Chloroethane		40.2	ug/L	0.300	1.00
67-66-3	Chloroform		46.5	ug/L	0.300	1.00
74-87-3	Chloromethane		32.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		58.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		47.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		30.0	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.1	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		56.0	ug/L	0.300	1.00
74-88-4	Iodomethane		228	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		54.0	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		39.3	ug/L	1.00	10.0
91-20-3	Naphthalene		53.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		52.8	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		49.5	ug/L	0.300	1.00
108-88-3	Toluene		47.4	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.6	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		44.6	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		226	ug/L	1.50	5.00
75-01-4	Vinyl chloride		35.9	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		43.9	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		100	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5290	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		53.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.8	ug/L	0.300	1.00
95-47-6	o-Xylene		52.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		54.2	ug/L	0.300	1.00

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Certificate of Analysis
Sample Summary

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SDG Number:	2017-1476	Date Collected:	05/03/2017 12:24	Matrix:	W
Lab Sample ID:	1203790476	Date Received:	05/05/2017 09:25		
Client Sample:	QC for batch 1665467	Client:	ARSL004	Project:	QC
Client ID:	CAMO-17-132236PS	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1665467	Inst:	VOA1.I	Dilution:	1
Run Date:	05/16/2017 19:50	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	05/16/2017 19:50				
Data File:	051617V1\11223.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		49.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		55.9	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		44.1	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.3	50.0	109	(71%-134%)
Bromofluorobenzene	48.5	50.0	97	(70%-131%)
Toluene-d8	52.8	50.0	106	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790477	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 20:48	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 20:48		
Data File: 051617V1\11225.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
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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		42.2	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		233	ug/L	1.50	5.00
107-13-1	Acrylonitrile		204	ug/L	1.50	5.00
107-05-1	Allyl chloride		213	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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790477	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 20:48	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 20:48		
Data File: 051617V1\11225.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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		242	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		2220	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		212	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		225	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		212	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		203	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

**Volatile
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Sample Summary**

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SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790477	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PS	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 20:48	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 20:48		
Data File: 051617V1\11225.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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	50.9	50.0	ug/L 102	(71%-134%)
Bromofluorobenzene	48.6	50.0	ug/L 97	(70%-131%)
Toluene-d8	53.5	50.0	ug/L 107	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790478	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 20:19	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 20:19		
Data File: 051617V1\11224.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		55.6	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.3	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		49.4	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		49.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.7	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		41.0	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		56.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		53.2	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		56.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		52.5	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		49.2	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		53.6	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		52.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		46.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		43.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		52.8	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		50.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		50.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		50.1	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		47.6	ug/L	0.300	1.00
78-93-3	2-Butanone		165	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		53.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		223	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		51.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		52.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		237	ug/L	1.50	5.00
67-64-1	Acetone		133	ug/L	1.50	10.0
75-05-8	Acetonitrile		944	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		42.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		52.8	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.7	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		48.7	ug/L	0.300	1.00
75-25-2	Bromoform		58.8	ug/L	0.300	1.00

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Sample Summary**

SDG Number:	2017-1476	Date Collected:	05/03/2017 12:24	Matrix:	W
Lab Sample ID:	1203790478	Date Received:	05/05/2017 09:25		
Client Sample:	QC for batch 1665467	Client:	ARSL004	Project:	QC
Client ID:	CAMO-17-132236PSD	Method:	SW-846:8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1665467	Inst:	VOA1.I	Dilution:	1
Run Date:	05/16/2017 20:19	Analyst:	VXY1	Purge Vol:	5 mL
Prep Date:	05/16/2017 20:19				
Data File:	051617V1\11224.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.9	ug/L	0.300	1.00
75-15-0	Carbon disulfide		205	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		46.7	ug/L	0.300	1.00
108-90-7	Chlorobenzene		49.1	ug/L	0.300	1.00
75-00-3	Chloroethane		40.3	ug/L	0.300	1.00
67-66-3	Chloroform		45.7	ug/L	0.300	1.00
74-87-3	Chloromethane		31.5	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		57.4	ug/L	0.300	1.00
74-95-3	Dibromomethane		46.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		29.2	ug/L	0.300	1.00
60-29-7	Ethyl ether		46.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		50.4	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.2	ug/L	0.300	1.00
74-88-4	Iodomethane		225	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		53.5	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		38.9	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		52.5	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		50.2	ug/L	0.300	1.00
108-88-3	Toluene		48.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		43.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		218	ug/L	1.50	5.00
75-01-4	Vinyl chloride		34.9	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		45.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		43.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		101	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4900	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		52.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		49.5	ug/L	0.300	1.00
95-47-6	o-Xylene		52.1	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		52.5	ug/L	0.300	1.00

**Volatile
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Sample Summary**

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SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790478	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 20:19	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 20:19		
Data File: 051617V1\11224.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		47.8	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		55.0	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		43.3	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		51.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.6	50.0	105	(71%-134%)
Bromofluorobenzene	48.6	50.0	97	(70%-131%)
Toluene-d8	53.9	50.0	108	(74%-124%)

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790479	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 21:17	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 21:17		
Data File: 051617V1\11226.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
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	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		42.1	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	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		232	ug/L	1.50	5.00
107-13-1	Acrylonitrile		198	ug/L	1.50	5.00
107-05-1	Allyl chloride		208	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

Volatile
Certificate of Analysis
Sample Summary

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790479	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 21:17	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 21:17		
Data File: 051617V1\11226.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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		242	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		2100	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		209	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		220	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		202	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		198	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

**Volatile
Certificate of Analysis
Sample Summary**

Page 3 of 3

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203790479	Date Received: 05/05/2017 09:25	
Client Sample: QC for batch 1665467	Client: ARSL004	Project: QC
Client ID: CAMO-17-132236PSD	Method: SW-846:8260B	SOP Ref: GL-OA-E-038
Batch ID: 1665467	Inst: VOA1.I	Dilution: 1
Run Date: 05/16/2017 21:17	Analyst: VXY1	Purge Vol: 5 mL
Prep Date: 05/16/2017 21:17		
Data File: 051617V1\11226.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
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
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	52.4	50.0	105	(71%-134%)
Bromofluorobenzene	49.1	50.0	98	(70%-131%)
Toluene-d8	53.5	50.0	107	(74%-124%)

Semi-Volatile Analysis

Case Narrative

**GC/MS Semivolatile
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1476
Work Order #: 422436**

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:	1662355
Prep Batch Number:	1662354

Sample Analysis

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

Sample ID	Client ID
422436002	CAMO-17-132236
422436004	CAMO-17-132306
1203782770	Method Blank (MB)
1203782771	Laboratory Control Sample (LCS)
1203783015	422436004(CAMO-17-132306) Matrix Spike (MS)
1203783016	422436004(CAMO-17-132306) 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# 39.

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 422436002 (CAMO-17-132236) and 422436004 (CAMO-17-132306) 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.

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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 422436004 (CAMO-17-132306) was selected for analysis as the matrix spike and matrix spike duplicate.

Spike Recovery Statement

The MS and MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

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

Internal Standard (ISTD) Acceptance

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

Technical Information:

Holding Time Specifications

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

Preparation/Analytical Method Verification

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

Sample Dilutions

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

Sample Re-extraction/Re-analysis

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

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

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

Manual Integrations

Manual integrations were not required on samples in this batch in this SDG for detected target analytes or surrogates.

TIC Comment

Tentatively identified compounds (TIC) were requested for samples 422436002 (CAMO-17-132236) and 422436004 (CAMO-17-132306) 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
MSD5.I	Agilent 6890/5973 GC/MS w/ 7683 Autosampler	HP6890/HP5973	DB-5MS	25m x 0.2mm, 0.33um (5% Phenylmethylpolysiloxane)

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

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

Client SDG: 2017-1476 GEL Work Order: 422436

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, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

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

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

Signature: 

Name: Barbara Bailey

Date: 31 MAY 2017

Title: Data Validator

Sample Data Summary

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

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1662355

Run Date: 05/08/2017 19:16

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/08/2017 07:50

Aliquot: 930 mL

Final Volume: 1 mL

Data File: s050817.B\s5e0815.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.8	ug/L	3.23	10.8
120-82-1	1,2,4-Trichlorobenzene	U	10.8	ug/L	3.23	10.8
95-50-1	1,2-Dichlorobenzene	U	10.8	ug/L	3.23	10.8
122-66-7	Azobenzene	U	10.8	ug/L	3.23	10.8
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.8	ug/L	3.23	10.8
106-46-7	1,4-Dichlorobenzene	U	10.8	ug/L	3.23	10.8
123-91-1	1,4-Dioxane	U	10.8	ug/L	3.23	10.8
90-12-0	1-Methylnaphthalene	U	1.08	ug/L	0.323	1.08
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.8	ug/L	3.23	10.8
95-95-4	2,4,5-Trichlorophenol	U	10.8	ug/L	3.23	10.8
88-06-2	2,4,6-Trichlorophenol	U	10.8	ug/L	3.23	10.8
120-83-2	2,4-Dichlorophenol	U	10.8	ug/L	3.23	10.8
105-67-9	2,4-Dimethylphenol	U	10.8	ug/L	3.23	10.8
51-28-5	2,4-Dinitrophenol	U	21.5	ug/L	5.38	21.5
121-14-2	2,4-Dinitrotoluene	U	10.8	ug/L	3.23	10.8
606-20-2	2,6-Dinitrotoluene	U	10.8	ug/L	3.23	10.8
91-58-7	2-Chloronaphthalene	U	1.08	ug/L	0.441	1.08
95-57-8	2-Chlorophenol	U	10.8	ug/L	3.23	10.8
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.8	ug/L	3.23	10.8
91-57-6	2-Methylnaphthalene	U	1.08	ug/L	0.323	1.08
88-75-5	2-Nitrophenol	U	10.8	ug/L	3.23	10.8
91-94-1	3,3'-Dichlorobenzidine	U	10.8	ug/L	3.23	10.8
101-55-3	4-Bromophenylphenylether	U	10.8	ug/L	3.23	10.8
59-50-7	Parachlorometa cresol	U	10.8	ug/L	3.23	10.8
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.8	ug/L	3.55	10.8
7005-72-3	4-Chlorophenylphenylether	U	10.8	ug/L	3.23	10.8
100-02-7	4-Nitrophenol	U	10.8	ug/L	3.23	10.8
83-32-9	Acenaphthene	U	1.08	ug/L	0.323	1.08
208-96-8	Acenaphthylene	U	1.08	ug/L	0.323	1.08
62-53-3	Aniline	U	10.8	ug/L	4.52	10.8
120-12-7	Anthracene	U	1.08	ug/L	0.323	1.08
1912-24-9	Atrazine	U	10.8	ug/L	3.23	10.8
92-87-5	Benzidine	U	10.8	ug/L	4.19	10.8
56-55-3	Benzo(a)anthracene	U	1.08	ug/L	0.323	1.08
50-32-8	Benzo(a)pyrene	U	1.08	ug/L	0.323	1.08
205-99-2	Benzo(b)fluoranthene	U	1.08	ug/L	0.323	1.08
191-24-2	Benzo(ghi)perylene	U	1.08	ug/L	0.323	1.08

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

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1662355

Run Date: 05/08/2017 19:16

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/08/2017 07:50

Aliquot: 930 mL

Final Volume: 1 mL

Data File: s050817.B\s5e0815.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.08	ug/L	0.323	1.08
65-85-0	Benzoic acid	U	21.5	ug/L	6.45	21.5
100-51-6	Benzyl alcohol	U	10.8	ug/L	3.23	10.8
85-68-7	Butylbenzylphthalate	U	10.8	ug/L	3.23	10.8
218-01-9	Chrysene	U	1.08	ug/L	0.323	1.08
84-74-2	Di-n-butylphthalate	U	10.8	ug/L	3.23	10.8
117-84-0	Di-n-octylphthalate	U	10.8	ug/L	3.23	10.8
53-70-3	Dibenzo(a,h)anthracene	U	1.08	ug/L	0.323	1.08
132-64-9	Dibenzofuran	U	10.8	ug/L	3.23	10.8
84-66-2	Diethylphthalate	U	10.8	ug/L	3.23	10.8
131-11-3	Dimethylphthalate	U	10.8	ug/L	3.23	10.8
88-85-7	Dinoseb	U	10.8	ug/L	3.23	10.8
122-39-4	Diphenylamine	U	10.8	ug/L	3.23	10.8
206-44-0	Fluoranthene	U	1.08	ug/L	0.323	1.08
86-73-7	Fluorene	U	1.08	ug/L	0.323	1.08
118-74-1	Hexachlorobenzene	U	10.8	ug/L	3.23	10.8
87-68-3	Hexachlorobutadiene	U	10.8	ug/L	3.23	10.8
77-47-4	Hexachlorocyclopentadiene	U	10.8	ug/L	3.23	10.8
67-72-1	Hexachloroethane	U	10.8	ug/L	3.23	10.8
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.08	ug/L	0.323	1.08
78-59-1	Isophorone	U	10.8	ug/L	3.76	10.8
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.8	ug/L	3.23	10.8
924-16-3	N-Nitrosodi-n-butylamine	U	10.8	ug/L	3.23	10.8
55-18-5	N-Nitrosodiethylamine	U	10.8	ug/L	3.23	10.8
621-64-7	N-Nitrosodi--n-propylamine	U	10.8	ug/L	3.23	10.8
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.8	ug/L	3.23	10.8
91-20-3	Naphthalene	U	1.08	ug/L	0.323	1.08
98-95-3	Nitrobenzene	U	10.8	ug/L	3.23	10.8
608-93-5	Pentachlorobenzene	U	10.8	ug/L	3.23	10.8
87-86-5	Pentachlorophenol	U	10.8	ug/L	3.23	10.8
85-01-8	Phenanthrene	U	1.08	ug/L	0.323	1.08
108-95-2	Phenol	U	10.8	ug/L	3.23	10.8
129-00-0	Pyrene	U	1.08	ug/L	0.323	1.08
110-86-1	Pyridine	U	10.8	ug/L	3.23	10.8
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.8	ug/L	3.23	10.8
111-91-1	bis(2-Chloroethoxy)methane	U	10.8	ug/L	3.23	10.8
111-44-4	bis(2-Chloroethyl) ether	U	10.8	ug/L	3.23	10.8
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.8	ug/L	3.23	10.8

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

Page 3 of 3

SDG Number: 2017-1476

Lab Sample ID: 422436002

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132236

Batch ID: 1662355

Run Date: 05/08/2017 19:16

Prep Date: 05/08/2017 07:50

Data File: s050817.B\s5e0815.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: JMB3

Aliquot: 930 mL

Column: DB-5ms

Project: ESHL00114

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.8	ug/L	3.98	10.8
99-09-2	3-Nitroaniline	U	10.8	ug/L	3.23	10.8
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.8	ug/L	3.23	10.8
88-74-4	2-Nitroaniline	U	10.8	ug/L	3.23	10.8
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.8	ug/L	3.23	10.8
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	93.7	108	ug/L	87	(32%-124%)
2-Fluorobiphenyl	43.1	53.8	ug/L	80	(32%-112%)
2-Fluorophenol	46.8	108	ug/L	44	(15%-88%)
Nitrobenzene-d5	43.3	53.8	ug/L	81	(36%-115%)
Phenol-d5	31.6	108	ug/L	29	(15%-91%)
p-Terphenyl-d14	37.5	53.8	ug/L	70	(36%-121%)

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: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1662355

Run Date: 05/08/2017 17:45

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/08/2017 07:50

Aliquot: 1000 mL

Final Volume: 1 mL

Data File: s050817.B\s5e0812.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	10.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	10.0	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	10.0	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	10.0	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	20.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	10.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.0	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	10.0	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	10.0	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	1.00	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	1.00	ug/L	0.300	1.00
62-53-3	Aniline	U	10.0	ug/L	4.20	10.0
120-12-7	Anthracene	U	1.00	ug/L	0.300	1.00
1912-24-9	Atrazine	U	10.0	ug/L	3.00	10.0
92-87-5	Benzidine	U	10.0	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	1.00	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	1.00	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	U	1.00	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	1.00	ug/L	0.300	1.00

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

Page 2 of 3

SDG Number: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client: ARSL004

Project: ESHL00114

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Inst: MSD5.I

Dilution: 1

Batch ID: 1662355

Run Date: 05/08/2017 17:45

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/08/2017 07:50

Aliquot: 1000 mL

Final Volume: 1 mL

Data File: s050817.B\s5e0812.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.00	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
218-01-9	Chrysene	U	1.00	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	10.0	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	10.0	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	1.00	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	10.0	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	1.00	ug/L	0.300	1.00
86-73-7	Fluorene	U	1.00	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	10.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.00	ug/L	0.300	1.00
78-59-1	Isophorone	U	10.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	10.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	10.0	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	1.00	ug/L	0.300	1.00
108-95-2	Phenol	U	10.0	ug/L	3.00	10.0
129-00-0	Pyrene	U	1.00	ug/L	0.300	1.00
110-86-1	Pyridine	U	10.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0

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

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SDG Number: 2017-1476

Lab Sample ID: 422436004

Date Collected: 05/03/2017 12:24

Date Received: 05/05/2017 09:25

Matrix: W

Client ID: CAMO-17-132306

Batch ID: 1662355

Run Date: 05/08/2017 17:45

Prep Date: 05/08/2017 07:50

Data File: s050817.B\s5e0812.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Project: ESHL00114

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	94.4	100	ug/L	94	(32%-124%)
2-Fluorobiphenyl	43.8	50.0	ug/L	88	(32%-112%)
2-Fluorophenol	48.6	100	ug/L	49	(15%-88%)
Nitrobenzene-d5	44.1	50.0	ug/L	88	(36%-115%)
Phenol-d5	31.4	100	ug/L	31	(15%-91%)
p-Terphenyl-d14	40.1	50.0	ug/L	80	(36%-121%)

Tentatively Identified Compound Summary

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

Quality Control Summary

Semi-Volatile
Surrogate Recovery Report

Page 1 of 1

SDG Number: 2017-1476

Matrix Type: LIQUID

Sample ID	Client ID	2FP %REC	PHL %REC	NBZ %REC	FBP %REC	TBP %REC	TPH %REC
1203782770	MB for batch 1662354	47	30	81	78	89	69
1203782771	LCS for batch 1662354	47	30	81	82	95	73
422436004	CAMO-17-132306	49	31	88	88	94	80
1203783015	CAMO-17-132306MS	68	52	89	85	100	77
1203783016	CAMO-17-132306MSD	64	49	84	81	94	70
422436002	CAMO-17-132236	44	29	81	80	87	70

Surrogate**Acceptance Limits**

2FP	= 2-Fluorophenol	(15%-88%)
PHL	= Phenol-d5	(15%-91%)
NBZ	= Nitrobenzene-d5	(36%-115%)
FBP	= 2-Fluorobiphenyl	(32%-112%)
TBP	= 2,4,6-Tribromophenol	(32%-124%)
TPH	= p-Terphenyl-d14	(36%-121%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1662354

Matrix: WATER

Lab Sample ID 1203782771

Instrument: MSD5.I

Analysis Date: 05/08/2017 16:45

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
62-75-9	LCS N-Methyl-N-nitrosomethylam	50.0	0.0	25.9	52	30-88
110-86-1	LCS Pyridine	50.0	0.0	27.3	55	27-89
62-53-3	LCS Aniline	50.0	0.0	37.2	74	49-112
108-95-2	LCS Phenol	50.0	0.0	16.1	32	16-82
111-44-4	LCS bis(2-Chloroethyl) ether	50.0	0.0	37.2	74	51-111
95-57-8	LCS 2-Chlorophenol	50.0	0.0	36.3	73	49-105
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	29.2	58	37-95
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	29.3	59	38-96
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	29.6	59	39-97
108-60-1	LCS bis(2-Chloro-1-methylethyl)et	50.0	0.0	37.4	75	44-123
100-51-6	LCS Benzyl alcohol	50.0	0.0	34.3	69	44-102
95-48-7	LCS o-Cresol	50.0	0.0	33.7	67	41-101
65794-96-9	LCS m,p-Cresols	50.0	0.0	32.2	64	43-102
621-64-7	LCS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	50.0	0.0	36.2	72	54-115
67-72-1	LCS Hexachloroethane	50.0	0.0	28.4	57	36-96
98-95-3	LCS Nitrobenzene	50.0	0.0	38.6	77	53-115
78-59-1	LCS Isophorone	50.0	0.0	39.0	78	56-117
88-75-5	LCS 2-Nitrophenol	50.0	0.0	41.7	83	51-113
105-67-9	LCS 2,4-Dimethylphenol	50.0	0.0	38.4	77	51-104
111-91-1	LCS bis(2-Chloroethoxy)methane	50.0	0.0	40.9	82	55-114
120-83-2	LCS 2,4-Dichlorophenol	50.0	0.0	41.7	83	53-109
65-85-0	LCS Benzoic acid	100	0.0	32.8	33	21-74

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1662354

Matrix: WATER

Lab Sample ID 1203782771

Instrument: MSD5.I

Analysis Date: 05/08/2017 16:45

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	LCS 4-Chloroaniline	50.0	0.0	49.2	98	65-136
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	29.6	59	35-98
59-50-7	LCS Parachlorometa cresol 4-Chloro-3-methylphenol	50.0	0.0	42.6	85	55-115
91-57-6	LCS 2-Methylnaphthalene	50.0	0.0	36.1	72	42-103
91-20-3	LCS Naphthalene	50.0	0.0	34.7	69	44-102
90-12-0	LCS 1-Methylnaphthalene	50.0	0.0	36.8	74	45-108
77-47-4	LCS Hexachlorocyclopentadiene	50.0	0.0	31.7	63	34-89
88-06-2	LCS 2,4,6-Trichlorophenol	50.0	0.0	43.6	87	55-120
95-95-4	LCS 2,4,5-Trichlorophenol	50.0	0.0	44.2	88	55-116
91-58-7	LCS 2-Chloronaphthalene	50.0	0.0	34.9	70	44-107
88-74-4	LCS 2-Nitroaniline o-Nitroaniline	50.0	0.0	45.8	92	53-121
99-09-2	LCS 3-Nitroaniline m-Nitroaniline	50.0	0.0	53.1	106	61-139
131-11-3	LCS Dimethylphthalate	50.0	0.0	42.2	84	60-122
606-20-2	LCS 2,6-Dinitrotoluene	50.0	0.0	43.7	87	59-122
121-14-2	LCS 2,4-Dinitrotoluene	50.0	0.0	45.9	92	57-124
208-96-8	LCS Acenaphthylene	50.0	0.0	42.2	84	50-113
83-32-9	LCS Acenaphthene	50.0	0.0	42.6	85	49-112
51-28-5	LCS 2,4-Dinitrophenol	50.0	0.0	44.0	88	34-122
132-64-9	LCS Dibenzofuran	50.0	0.0	40.0	80	50-111
58-90-2	LCS 2,3,4,6-Tetrachlorophenol	50.0	0.0	46.6	93	54-122
84-66-2	LCS Diethylphthalate	50.0	0.0	39.3	79	57-122
100-02-7	LCS 4-Nitrophenol	50.0	0.0	19.1	38	15-137

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1662354

Matrix: WATER

Lab Sample ID 1203782771

Instrument: MSD5.I

Analysis Date: 05/08/2017 16:45

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	LCS Fluorene	50.0	0.0	42.0	84	52-114
7005-72-3	LCS 4-Chlorophenylphenylether	50.0	0.0	41.3	83	52-121
100-01-6	LCS 4-Nitroaniline <i>p-Nitroaniline</i>	50.0	0.0	47.6	95	44-137
534-52-1	LCS 2-Methyl-4,6-dinitrophenol	50.0	0.0	45.6	91	45-124
122-39-4	LCS Diphenylamine	50.0	0.0	36.6	73	55-113
122-66-7	LCS Azobenzene <i>1,2-Diphenylhydrazine</i>	50.0	0.0	39.0	78	53-115
101-55-3	LCS 4-Bromophenylphenylether	50.0	0.0	38.2	76	54-116
118-74-1	LCS Hexachlorobenzene	50.0	0.0	38.2	76	54-115
87-86-5	LCS Pentachlorophenol	50.0	0.0	51.1	102	41-116
85-01-8	LCS Phenanthrene	50.0	0.0	40.6	81	55-110
120-12-7	LCS Anthracene	50.0	0.0	40.7	81	56-112
84-74-2	LCS Di-n-butylphthalate	50.0	0.0	36.6	73	57-123
206-44-0	LCS Fluoranthene	50.0	0.0	45.1	90	54-118
129-00-0	LCS Pyrene	50.0	0.0	34.9	70	49-121
85-68-7	LCS Butylbenzylphthalate	50.0	0.0	33.7	67	52-125
117-81-7	LCS bis(2-Ethylhexyl)phthalate	50.0	0.0	30.3	61	52-125
56-55-3	LCS Benzo(a)anthracene	50.0	0.0	41.4	83	57-112
218-01-9	LCS Chrysene	50.0	0.0	41.4	83	58-117
117-84-0	LCS Di-n-octylphthalate	50.0	0.0	33.2	66	50-129
205-99-2	LCS Benzo(b)fluoranthene	50.0	0.0	41.3	83	41-118
207-08-9	LCS Benzo(k)fluoranthene	50.0	0.0	43.7	87	42-121
50-32-8	LCS Benzo(a)pyrene	50.0	0.0	41.5	83	40-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-1476

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1662354

Matrix: WATER

Lab Sample ID 1203782771

Instrument: MSD5.I

Analysis Date: 05/08/2017 16:45

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	50.0	0.0	37.7	75	34-125
53-70-3	LCS Dibenzo(a,h)anthracene	50.0	0.0	38.0	76	38-129
191-24-2	LCS Benzo(ghi)perylene	50.0	0.0	36.8	74	33-131
123-91-1	LCS 1,4-Dioxane	50.0	0.0	28.1	56	38-78
930-55-2	LCS N-Nitrosopyrrolidine	50.0	0.0	39.4	79	54-113
95-94-3	LCS 1,2,4,5-Tetrachlorobenzene	50.0	0.0	35.2	70	44-102
1912-24-9	LCS Atrazine	50.0	0.0	48.2	96	60-131
92-87-5	LCS Benzidine	100	0.0	67.4	67	20-144
91-94-1	LCS 3,3'-Dichlorobenzidine	50.0	0.0	43.9	88	43-127
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	31.4	63	39-99

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike

Client ID: CAMO-17-132306MS

Matrix: W

Lab Sample ID 1203783015

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:16

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	116	0.00 U	86.3	74	25-106
110-86-1	MS Pyridine	116	0.00 U	79.6	68	24-93
62-53-3	MS Aniline	116	0.00 U	100	86	37-113
108-95-2	MS Phenol	116	0.00 U	63.5	55	23-82
111-44-4	MS bis(2-Chloroethyl) ether	116	0.00 U	93.9	81	39-114
95-57-8	MS 2-Chlorophenol	116	0.00 U	93.7	81	37-108
541-73-1	MS 1,3-Dichlorobenzene	116	0.00 U	81.9	70	27-97
106-46-7	MS 1,4-Dichlorobenzene	116	0.00 U	82.8	71	28-97
95-50-1	MS 1,2-Dichlorobenzene	116	0.00 U	83.1	71	28-99
108-60-1	MS bis(2-Chloro-1-methylethyl)et	116	0.00 U	97.0	83	32-127
100-51-6	MS Benzyl alcohol	116	0.00 U	94.7	81	37-116
95-48-7	MS o-Cresol	116	0.00 U	94.6	81	34-109
65794-96-9	MS m,p-Cresols	116	0.00 U	93.4	80	36-120
621-64-7	MS N-Nitrosodi--n-propylamine <i>N-Nitrosodipropylamine</i>	116	0.00 U	92.1	79	42-118
67-72-1	MS Hexachloroethane	116	0.00 U	82.1	71	29-94
98-95-3	MS Nitrobenzene	116	0.00 U	97.5	84	38-123
78-59-1	MS Isophorone	116	0.00 U	96.1	83	43-120
88-75-5	MS 2-Nitrophenol	116	0.00 U	104	90	39-115
105-67-9	MS 2,4-Dimethylphenol	116	0.00 U	94.4	81	39-107
111-91-1	MS bis(2-Chloroethoxy)methane	116	0.00 U	99.9	86	42-118
120-83-2	MS 2,4-Dichlorophenol	116	0.00 U	99.9	86	40-111
65-85-0	MS Benzoic acid	233	0.00 U	150	64	17-95

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike

Client ID: CAMO-17-132306MS

Matrix: W

Lab Sample ID 1203783015

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:16

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
106-47-8	MS	4-Chloroaniline	116	0.00	U	125	107	44-138
87-68-3	MS	Hexachlorobutadiene	116	0.00	U	84.3	72	26-98
59-50-7	MS	Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00	U	105	90	41-122
91-57-6	MS	2-Methylnaphthalene	116	0.00	U	95.6	82	29-109
91-20-3	MS	Naphthalene	116	0.00	U	94.7	81	31-108
90-12-0	MS	1-Methylnaphthalene	116	0.00	U	96.7	83	33-112
77-47-4	MS	Hexachlorocyclopentadiene	116	0.00	U	84.9	73	26-79
88-06-2	MS	2,4,6-Trichlorophenol	116	0.00	U	105	91	39-124
95-95-4	MS	2,4,5-Trichlorophenol	116	0.00	U	108	93	42-120
91-58-7	MS	2-Chloronaphthalene	116	0.00	U	88.6	76	29-113
88-74-4	MS	2-Nitroaniline o-Nitroaniline	116	0.00	U	110	95	41-121
99-09-2	MS	3-Nitroaniline m-Nitroaniline	116	0.00	U	132	114	42-144
131-11-3	MS	Dimethylphthalate	116	0.00	U	99.6	86	45-128
606-20-2	MS	2,6-Dinitrotoluene	116	0.00	U	109	93	46-124
121-14-2	MS	2,4-Dinitrotoluene	116	0.00	U	113	97	45-125
208-96-8	MS	Acenaphthylene	116	0.00	U	104	89	35-120
83-32-9	MS	Acenaphthene	116	0.00	U	105	91	35-117
51-28-5	MS	2,4-Dinitrophenol	116	0.00	U	111	96	27-122
132-64-9	MS	Dibenzofuran	116	0.00	U	98.9	85	38-113
58-90-2	MS	2,3,4,6-Tetrachlorophenol	116	0.00	U	114	98	40-128
84-66-2	MS	Diethylphthalate	116	0.00	U	94.1	81	43-127
100-02-7	MS	4-Nitrophenol	116	0.00	U	65.6	56	17-85

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike

Client ID: CAMO-17-132306MS

Matrix: W

Lab Sample ID 1203783015

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:16

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No		Parmname	Amount Added ug/L	Sample Conc. ug/L		Spike Conc. ug/L	Recovery %	Acceptance Limits
86-73-7	MS	Fluorene	116	0.00	U	103	88	39-117
7005-72-3	MS	4-Chlorophenylphenylether	116	0.00	U	102	87	39-121
100-01-6	MS	4-Nitroaniline <i>p</i> -Nitroaniline	116	0.00	U	118	101	30-133
534-52-1	MS	2-Methyl-4,6-dinitrophenol	116	0.00	U	115	99	32-126
122-39-4	MS	Diphenylamine	116	0.00	U	90.3	78	37-118
122-66-7	MS	Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00	U	95.5	82	38-120
101-55-3	MS	4-Bromophenylphenylether	116	0.00	U	94.2	81	39-121
118-74-1	MS	Hexachlorobenzene	116	0.00	U	92.9	80	40-118
87-86-5	MS	Pentachlorophenol	116	0.00	U	129	111	35-121
85-01-8	MS	Phenanthrene	116	0.00	U	99.5	86	40-115
120-12-7	MS	Anthracene	116	0.00	U	99.0	85	38-120
84-74-2	MS	Di-n-butylphthalate	116	0.00	U	89.1	77	41-128
206-44-0	MS	Fluoranthene	116	0.00	U	114	98	41-119
129-00-0	MS	Pyrene	116	0.00	U	86.2	74	35-128
85-68-7	MS	Butylbenzylphthalate	116	0.00	U	86.0	74	40-129
117-81-7	MS	bis(2-Ethylhexyl)phthalate	116	0.00	U	77.4	67	38-131
56-55-3	MS	Benzo(a)anthracene	116	0.00	U	103	89	39-120
218-01-9	MS	Chrysene	116	0.00	U	103	88	41-124
117-84-0	MS	Di-n-octylphthalate	116	0.00	U	81.4	70	37-134
205-99-2	MS	Benzo(b)fluoranthene	116	0.00	U	103	89	31-122
207-08-9	MS	Benzo(k)fluoranthene	116	0.00	U	108	93	33-123
50-32-8	MS	Benzo(a)pyrene	116	0.00	U	102	88	32-118

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike

Client ID: CAMO-17-132306MS

Matrix: W

Lab Sample ID 1203783015

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:16

Dilution: 1

Analyst: JMB3

Prep Batch ID:1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	116	0.00 U	96.8	83	27-121
53-70-3	MS Dibenzo(a,h)anthracene	116	0.00 U	94.7	81	30-125
191-24-2	MS Benzo(ghi)perylene	116	0.00 U	91.8	79	24-126
123-91-1	MS 1,4-Dioxane	116	0.00 U	92.9	80	24-110
930-55-2	MS N-Nitrosopyrrolidine	116	0.00 U	102	88	47-119
95-94-3	MS 1,2,4,5-Tetrachlorobenzene	116	0.00 U	91.7	79	32-101
1912-24-9	MS Atrazine	116	0.00 U	116	100	42-129
92-87-5	MS Benzidine	233	0.00 U	165	71	15-130
91-94-1	MS 3,3'-Dichlorobenzidine	116	0.00 U	108	92	34-124
120-82-1	MS 1,2,4-Trichlorobenzene	116	0.00 U	88.1	76	26-102

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132306MSD

Matrix: W

Lab Sample ID 1203783016

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:46

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	116	0.00	U	82.2	71	25-106	5	0-30
110-86-1	MSD Pyridine	116	0.00	U	76.4	66	24-93	4	0-30
62-53-3	MSD Aniline	116	0.00	U	93.1	80	37-113	7	0-30
108-95-2	MSD Phenol	116	0.00	U	60.5	52	23-82	5	0-30
111-44-4	MSD bis(2-Chloroethyl) ether	116	0.00	U	89.5	77	39-114	5	0-30
95-57-8	MSD 2-Chlorophenol	116	0.00	U	88.4	76	37-108	6	0-30
541-73-1	MSD 1,3-Dichlorobenzene	116	0.00	U	77.2	66	27-97	6	0-30
106-46-7	MSD 1,4-Dichlorobenzene	116	0.00	U	77.0	66	28-97	7	0-30
95-50-1	MSD 1,2-Dichlorobenzene	116	0.00	U	78.2	67	28-99	6	0-30
108-60-1	MSD bis(2-Chloro-1-methylethyl)et	116	0.00	U	90.0	77	32-127	7	0-30
100-51-6	MSD Benzyl alcohol	116	0.00	U	89.9	77	37-116	5	0-30
95-48-7	MSD o-Cresol	116	0.00	U	88.9	76	34-109	6	0-30
65794-96-9	MSD m,p-Cresols	116	0.00	U	88.6	76	36-120	5	0-30
621-64-7	MSD N-Nitrosodi--n-propylamine N-Nitrosodipropylamine	116	0.00	U	85.5	74	42-118	7	0-30
67-72-1	MSD Hexachloroethane	116	0.00	U	75.2	65	29-94	9	0-30
98-95-3	MSD Nitrobenzene	116	0.00	U	92.8	80	38-123	5	0-30
78-59-1	MSD Isophorone	116	0.00	U	91.1	78	43-120	5	0-30
88-75-5	MSD 2-Nitrophenol	116	0.00	U	101	87	39-115	3	0-30
105-67-9	MSD 2,4-Dimethylphenol	116	0.00	U	90.7	78	39-107	4	0-30
111-91-1	MSD bis(2-Chloroethoxy)methane	116	0.00	U	95.3	82	42-118	5	0-30
120-83-2	MSD 2,4-Dichlorophenol	116	0.00	U	94.6	81	40-111	5	0-30
65-85-0	MSD Benzoic acid	233	0.00	U	134	57	17-95	11	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132306MSD

Matrix: W

Lab Sample ID 1203783016

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:46

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
106-47-8	MSD 4-Chloroaniline	116	0.00 U	117	101	44-138	6	0-30
87-68-3	MSD Hexachlorobutadiene	116	0.00 U	77.9	67	26-98	8	0-30
59-50-7	MSD Parachlorometa cresol 4-Chloro-3-methylphenol	116	0.00 U	99.9	86	41-122	5	0-30
91-57-6	MSD 2-Methylnaphthalene	116	0.00 U	90.3	78	29-109	6	0-30
91-20-3	MSD Naphthalene	116	0.00 U	89.6	77	31-108	6	0-30
90-12-0	MSD 1-Methylnaphthalene	116	0.00 U	91.9	79	33-112	5	0-30
77-47-4	MSD Hexachlorocyclopentadiene	116	0.00 U	81.1	70	26-79	5	0-30
88-06-2	MSD 2,4,6-Trichlorophenol	116	0.00 U	99.3	85	39-124	6	0-30
95-95-4	MSD 2,4,5-Trichlorophenol	116	0.00 U	103	89	42-120	5	0-30
91-58-7	MSD 2-Chloronaphthalene	116	0.00 U	84.0	72	29-113	5	0-30
88-74-4	MSD 2-Nitroaniline o-Nitroaniline	116	0.00 U	102	88	41-121	7	0-30
99-09-2	MSD 3-Nitroaniline m-Nitroaniline	116	0.00 U	123	106	42-144	7	0-30
131-11-3	MSD Dimethylphthalate	116	0.00 U	93.9	81	45-128	6	0-30
606-20-2	MSD 2,6-Dinitrotoluene	116	0.00 U	101	87	46-124	7	0-30
121-14-2	MSD 2,4-Dinitrotoluene	116	0.00 U	106	91	45-125	6	0-30
208-96-8	MSD Acenaphthylene	116	0.00 U	97.9	84	35-120	6	0-30
83-32-9	MSD Acenaphthene	116	0.00 U	98.7	85	35-117	7	0-30
51-28-5	MSD 2,4-Dinitrophenol	116	0.00 U	105	90	27-122	6	0-30
132-64-9	MSD Dibenzofuran	116	0.00 U	92.0	79	38-113	7	0-30
58-90-2	MSD 2,3,4,6-Tetrachlorophenol	116	0.00 U	107	92	40-128	7	0-30
84-66-2	MSD Diethylphthalate	116	0.00 U	87.6	75	43-127	7	0-30
100-02-7	MSD 4-Nitrophenol	116	0.00 U	63.0	54	17-85	4	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132306MSD

Matrix: W

Lab Sample ID 1203783016

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:46

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	116	0.00 U	95.5	82	39-117	7	0-30
7005-72-3	MSD 4-Chlorophenylphenylether	116	0.00 U	96.0	83	39-121	6	0-30
100-01-6	MSD 4-Nitroaniline <i>p</i> -Nitroaniline	116	0.00 U	110	95	30-133	7	0-30
534-52-1	MSD 2-Methyl-4,6-dinitrophenol	116	0.00 U	106	91	32-126	8	0-30
122-39-4	MSD Diphenylamine	116	0.00 U	83.9	72	37-118	7	0-30
122-66-7	MSD Azobenzene <i>1,2-Diphenylhydrazine</i>	116	0.00 U	88.8	76	38-120	7	0-30
101-55-3	MSD 4-Bromophenylphenylether	116	0.00 U	87.5	75	39-121	7	0-30
118-74-1	MSD Hexachlorobenzene	116	0.00 U	87.7	75	40-118	6	0-30
87-86-5	MSD Pentachlorophenol	116	0.00 U	119	102	35-121	9	0-30
85-01-8	MSD Phenanthrene	116	0.00 U	93.5	80	40-115	6	0-30
120-12-7	MSD Anthracene	116	0.00 U	93.0	80	38-120	6	0-30
84-74-2	MSD Di-n-butylphthalate	116	0.00 U	83.4	72	41-128	7	0-30
206-44-0	MSD Fluoranthene	116	0.00 U	106	91	41-119	7	0-30
129-00-0	MSD Pyrene	116	0.00 U	79.8	69	35-128	8	0-30
85-68-7	MSD Butylbenzylphthalate	116	0.00 U	79.2	68	40-129	8	0-30
117-81-7	MSD bis(2-Ethylhexyl)phthalate	116	0.00 U	70.5	61	38-131	9	0-30
56-55-3	MSD Benzo(a)anthracene	116	0.00 U	96.2	83	39-120	7	0-30
218-01-9	MSD Chrysene	116	0.00 U	95.6	82	41-124	7	0-30
117-84-0	MSD Di-n-octylphthalate	116	0.00 U	75.7	65	37-134	7	0-30
205-99-2	MSD Benzo(b)fluoranthene	116	0.00 U	96.2	83	31-122	7	0-30
207-08-9	MSD Benzo(k)fluoranthene	116	0.00 U	100	86	33-123	8	0-30
50-32-8	MSD Benzo(a)pyrene	116	0.00 U	95.5	82	32-118	7	0-30

Semi-Volatile
Quality Control Summary
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-1476

Sample Type: Matrix Spike Duplicate

Client ID: CAMO-17-132306MSD

Matrix: W

Lab Sample ID 1203783016

Instrument: MSD5.I

Analysis Date: 05/08/2017 18:46

Dilution: 1

Analyst: JMB3

Prep Batch ID: 1662354

Inj. Vol: 1 uL

Batch ID: 1662355

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	116	0.00	U	92.1	79	27-121	5	0-30
53-70-3	MSD Dibenzo(a,h)anthracene	116	0.00	U	90.0	77	30-125	5	0-30
191-24-2	MSD Benzo(ghi)perylene	116	0.00	U	86.9	75	24-126	5	0-30
123-91-1	MSD 1,4-Dioxane	116	0.00	U	88.7	76	24-110	5	0-30
930-55-2	MSD N-Nitrosopyrrolidine	116	0.00	U	96.3	83	47-119	6	0-30
95-94-3	MSD 1,2,4,5-Tetrachlorobenzene	116	0.00	U	86.7	75	32-101	6	0-30
1912-24-9	MSD Atrazine	116	0.00	U	109	94	42-129	6	0-30
92-87-5	MSD Benzidine	233	0.00	U	143	61	15-130	14	0-30
91-94-1	MSD 3,3'-Dichlorobenzidine	116	0.00	U	99.4	85	34-124	8	0-30
120-82-1	MSD 1,2,4-Trichlorobenzene	116	0.00	U	83.9	72	26-102	5	0-30

Method Blank Summary

Page 1 of 1

SDG Number:	2017-1476	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1662354	Instrument ID:	MSD5.I	Data File:	s050817.B\s5e0809.D
Lab Sample ID:	1203782770	Prep Date:	05/08/2017 07:50	Analyzed:	05/08/17 16:10
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 1662354	1203782771	s050817.B\s5e0810.D	05/08/17	1645
02 CAMO-17-132306	422436004	s050817.B\s5e0812.D	05/08/17	1745
03 CAMO-17-132306MS	1203783015	s050817.B\s5e0813.D	05/08/17	1816
04 CAMO-17-132306MSD	1203783016	s050817.B\s5e0814.D	05/08/17	1846
05 CAMO-17-132236	422436002	s050817.B\s5e0815.D	05/08/17	1916

Quality Control Data

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

SDG Number: 2017-1476

Lab Sample ID: 1203782770

Client Sample: QC for batch 1662354

Client ID: MB for batch 1662354

Batch ID: 1662355

Run Date: 05/08/2017 16:10

Prep Date: 05/08/2017 07:50

Data File: s050817.B\s5e0809.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene	U	10.0	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene	U	10.0	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
122-66-7	Azobenzene	U	10.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene	U	10.0	ug/L	3.00	10.0
123-91-1	1,4-Dioxane	U	10.0	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol	U	10.0	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol	U	10.0	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol	U	10.0	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol	U	10.0	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol	U	10.0	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol	U	20.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene	U	10.0	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene	U	1.00	ug/L	0.410	1.00
95-57-8	2-Chlorophenol	U	10.0	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol	U	10.0	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene	U	1.00	ug/L	0.300	1.00
88-75-5	2-Nitrophenol	U	10.0	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine	U	10.0	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether	U	10.0	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol	U	10.0	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline	U	10.0	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether	U	10.0	ug/L	3.00	10.0
100-02-7	4-Nitrophenol	U	10.0	ug/L	3.00	10.0
83-32-9	Acenaphthene	U	1.00	ug/L	0.300	1.00
208-96-8	Acenaphthylene	U	1.00	ug/L	0.300	1.00
62-53-3	Aniline	U	10.0	ug/L	4.20	10.0
120-12-7	Anthracene	U	1.00	ug/L	0.300	1.00
1912-24-9	Atrazine	U	10.0	ug/L	3.00	10.0
92-87-5	Benzidine	U	10.0	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene	U	1.00	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene	U	1.00	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene	U	1.00	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1476

Matrix: WATER

Lab Sample ID: 1203782770

Client Sample: QC for batch 1662354

Client: ARSL004

Project: QC

Client ID: MB for batch 1662354

Method: SW846 3510C/8270D

SOP Ref: GL-OA-E-009

Batch ID: 1662355

Inst: MSD5.I

Dilution: 1

Run Date: 05/08/2017 16:10

Analyst: JMB3

Inj. Vol: 1 uL

Prep Date: 05/08/2017 07:50

Aliquot: 1000 mL

Final Volume: 1 mL

Data File: s050817.B\s5e0809.D

Column: DB-5ms

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene	U	1.00	ug/L	0.300	1.00
65-85-0	Benzoic acid	U	20.0	ug/L	6.00	20.0
100-51-6	Benzyl alcohol	U	10.0	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate	U	10.0	ug/L	3.00	10.0
218-01-9	Chrysene	U	1.00	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate	U	10.0	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate	U	10.0	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene	U	1.00	ug/L	0.300	1.00
132-64-9	Dibenzofuran	U	10.0	ug/L	3.00	10.0
84-66-2	Diethylphthalate	U	10.0	ug/L	3.00	10.0
131-11-3	Dimethylphthalate	U	10.0	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine	U	10.0	ug/L	3.00	10.0
206-44-0	Fluoranthene	U	1.00	ug/L	0.300	1.00
86-73-7	Fluorene	U	1.00	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene	U	10.0	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene	U	10.0	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene	U	10.0	ug/L	3.00	10.0
67-72-1	Hexachloroethane	U	10.0	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene	U	1.00	ug/L	0.300	1.00
78-59-1	Isophorone	U	10.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine	U	10.0	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine	U	10.0	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine	U	10.0	ug/L	3.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
98-95-3	Nitrobenzene	U	10.0	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol	U	10.0	ug/L	3.00	10.0
85-01-8	Phenanthrene	U	1.00	ug/L	0.300	1.00
108-95-2	Phenol	U	10.0	ug/L	3.00	10.0
129-00-0	Pyrene	U	1.00	ug/L	0.300	1.00
110-86-1	Pyridine	U	10.0	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether	U	10.0	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane	U	10.0	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether	U	10.0	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate	U	10.0	ug/L	3.00	10.0

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Sample Summary**

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SDG Number: 2017-1476	Matrix: WATER
Lab Sample ID: 1203782770	
Client Sample: QC for batch 1662354	Client: ARSL004
Client ID: MB for batch 1662354	Method: SW846 3510C/8270D
Batch ID: 1662355	Inst: MSD5.I
Run Date: 05/08/2017 16:10	Analyst: JMB3
Prep Date: 05/08/2017 07:50	Aliquot: 1000 mL
Data File: s050817.B\s5e0809.D	Column: DB-5ms
	Project: QC
	SOP Ref: GL-OA-E-009
	Dilution: 1
	Inj. Vol: 1 uL
	Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols	U	10.0	ug/L	3.70	10.0
99-09-2	3-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol	U	10.0	ug/L	3.00	10.0
88-74-4	2-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline	U	10.0	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	89.5	100	ug/L	89	(32%-124%)
2-Fluorobiphenyl	38.8	50.0	ug/L	78	(32%-112%)
2-Fluorophenol	46.8	100	ug/L	47	(15%-88%)
Nitrobenzene-d5	40.7	50.0	ug/L	81	(36%-115%)
Phenol-d5	30.5	100	ug/L	30	(15%-91%)
p-Terphenyl-d14	34.5	50.0	ug/L	69	(36%-121%)

Tentatively Identified Compound Summary

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

**Semi-Volatile
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Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 1203782771

Client Sample: QC for batch 1662354

Client ID: LCS for batch 1662354

Batch ID: 1662355

Run Date: 05/08/2017 16:45

Prep Date: 05/08/2017 07:50

Data File: s050817.B\s5e0810.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		35.2	ug/L	3.00	10.0
120-82-1	1,2,4-Trichlorobenzene		31.4	ug/L	3.00	10.0
95-50-1	1,2-Dichlorobenzene		29.6	ug/L	3.00	10.0
122-66-7	Azobenzene		39.0	ug/L	3.00	10.0
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		29.2	ug/L	3.00	10.0
106-46-7	1,4-Dichlorobenzene		29.3	ug/L	3.00	10.0
123-91-1	1,4-Dioxane		28.1	ug/L	3.00	10.0
90-12-0	1-Methylnaphthalene		36.8	ug/L	0.300	1.00
58-90-2	2,3,4,6-Tetrachlorophenol		46.6	ug/L	3.00	10.0
95-95-4	2,4,5-Trichlorophenol		44.2	ug/L	3.00	10.0
88-06-2	2,4,6-Trichlorophenol		43.6	ug/L	3.00	10.0
120-83-2	2,4-Dichlorophenol		41.7	ug/L	3.00	10.0
105-67-9	2,4-Dimethylphenol		38.4	ug/L	3.00	10.0
51-28-5	2,4-Dinitrophenol		44.0	ug/L	5.00	20.0
121-14-2	2,4-Dinitrotoluene		45.9	ug/L	3.00	10.0
606-20-2	2,6-Dinitrotoluene		43.7	ug/L	3.00	10.0
91-58-7	2-Chloronaphthalene		34.9	ug/L	0.410	1.00
95-57-8	2-Chlorophenol		36.3	ug/L	3.00	10.0
534-52-1	2-Methyl-4,6-dinitrophenol		45.6	ug/L	3.00	10.0
91-57-6	2-Methylnaphthalene		36.1	ug/L	0.300	1.00
88-75-5	2-Nitrophenol		41.7	ug/L	3.00	10.0
91-94-1	3,3'-Dichlorobenzidine		43.9	ug/L	3.00	10.0
101-55-3	4-Bromophenylphenylether		38.2	ug/L	3.00	10.0
59-50-7	Parachlorometa cresol		42.6	ug/L	3.00	10.0
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		49.2	ug/L	3.30	10.0
7005-72-3	4-Chlorophenylphenylether		41.3	ug/L	3.00	10.0
100-02-7	4-Nitrophenol		19.1	ug/L	3.00	10.0
83-32-9	Acenaphthene		42.6	ug/L	0.300	1.00
208-96-8	Acenaphthylene		42.2	ug/L	0.300	1.00
62-53-3	Aniline		37.2	ug/L	4.20	10.0
120-12-7	Anthracene		40.7	ug/L	0.300	1.00
1912-24-9	Atrazine		48.2	ug/L	3.00	10.0
92-87-5	Benzidine		67.4	ug/L	3.90	10.0
56-55-3	Benzo(a)anthracene		41.4	ug/L	0.300	1.00
50-32-8	Benzo(a)pyrene		41.5	ug/L	0.300	1.00
205-99-2	Benzo(b)fluoranthene		41.3	ug/L	0.300	1.00
191-24-2	Benzo(ghi)perylene		36.8	ug/L	0.300	1.00

**Semi-Volatile
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Sample Summary**

SDG Number: 2017-1476

Lab Sample ID: 1203782771

Client Sample: QC for batch 1662354

Client ID: LCS for batch 1662354

Batch ID: 1662355

Run Date: 05/08/2017 16:45

Prep Date: 05/08/2017 07:50

Data File: s050817.B\s5e0810.D

Client: ARSL004

Method: SW846 3510C/8270D

Inst: MSD5.I

Analyst: JMB3

Aliquot: 1000 mL

Column: DB-5ms

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-009

Dilution: 1

Inj. Vol: 1 uL

Final Volume: 1 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		43.7	ug/L	0.300	1.00
65-85-0	Benzoic acid		32.8	ug/L	6.00	20.0
100-51-6	Benzyl alcohol		34.3	ug/L	3.00	10.0
85-68-7	Butylbenzylphthalate		33.7	ug/L	3.00	10.0
218-01-9	Chrysene		41.4	ug/L	0.300	1.00
84-74-2	Di-n-butylphthalate		36.6	ug/L	3.00	10.0
117-84-0	Di-n-octylphthalate		33.2	ug/L	3.00	10.0
53-70-3	Dibenzo(a,h)anthracene		38.0	ug/L	0.300	1.00
132-64-9	Dibenzofuran		40.0	ug/L	3.00	10.0
84-66-2	Diethylphthalate		39.3	ug/L	3.00	10.0
131-11-3	Dimethylphthalate		42.2	ug/L	3.00	10.0
88-85-7	Dinoseb	U	10.0	ug/L	3.00	10.0
122-39-4	Diphenylamine		36.6	ug/L	3.00	10.0
206-44-0	Fluoranthene		45.1	ug/L	0.300	1.00
86-73-7	Fluorene		42.0	ug/L	0.300	1.00
118-74-1	Hexachlorobenzene		38.2	ug/L	3.00	10.0
87-68-3	Hexachlorobutadiene		29.6	ug/L	3.00	10.0
77-47-4	Hexachlorocyclopentadiene		31.7	ug/L	3.00	10.0
67-72-1	Hexachloroethane		28.4	ug/L	3.00	10.0
193-39-5	Indeno(1,2,3-cd)pyrene		37.7	ug/L	0.300	1.00
78-59-1	Isophorone		39.0	ug/L	3.50	10.0
62-75-9	N-Methyl-N-nitrosomethylamine		25.9	ug/L	3.00	10.0
924-16-3	N-Nitrosodi-n-butylamine	U	10.0	ug/L	3.00	10.0
55-18-5	N-Nitrosodiethylamine	U	10.0	ug/L	3.00	10.0
621-64-7	N-Nitrosodi--n-propylamine		36.2	ug/L	3.00	10.0
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		39.4	ug/L	3.00	10.0
91-20-3	Naphthalene		34.7	ug/L	0.300	1.00
98-95-3	Nitrobenzene		38.6	ug/L	3.00	10.0
608-93-5	Pentachlorobenzene	U	10.0	ug/L	3.00	10.0
87-86-5	Pentachlorophenol		51.1	ug/L	3.00	10.0
85-01-8	Phenanthrene		40.6	ug/L	0.300	1.00
108-95-2	Phenol		16.1	ug/L	3.00	10.0
129-00-0	Pyrene		34.9	ug/L	0.300	1.00
110-86-1	Pyridine		27.3	ug/L	3.00	10.0
108-60-1	bis(2-Chloro-1-methylethyl)ether		37.4	ug/L	3.00	10.0
111-91-1	bis(2-Chloroethoxy)methane		40.9	ug/L	3.00	10.0
111-44-4	bis(2-Chloroethyl) ether		37.2	ug/L	3.00	10.0
117-81-7	bis(2-Ethylhexyl)phthalate		30.3	ug/L	3.00	10.0

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Sample Summary**

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SDG Number: 2017-1476		Matrix: WATER
Lab Sample ID: 1203782771		
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: LCS for batch 1662354	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 16:45	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 1000 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0810.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		32.2	ug/L	3.70	10.0
99-09-2	3-Nitroaniline		53.1	ug/L	3.00	10.0
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		33.7	ug/L	3.00	10.0
88-74-4	2-Nitroaniline		45.8	ug/L	3.00	10.0
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		47.6	ug/L	3.00	10.0
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal		Recovery%	Acceptable Limits
2,4,6-Tribromophenol	94.7	100	ug/L	95	(32%-124%)
2-Fluorobiphenyl	40.8	50.0	ug/L	82	(32%-112%)
2-Fluorophenol	47.4	100	ug/L	47	(15%-88%)
Nitrobenzene-d5	40.7	50.0	ug/L	81	(36%-115%)
Phenol-d5	29.9	100	ug/L	30	(15%-91%)
p-Terphenyl-d14	36.7	50.0	ug/L	73	(36%-121%)

**Semi-Volatile
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Sample Summary**

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203783015	Date Received: 05/05/2017 09:00	
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: CAMO-17-132306MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 18:16	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0813.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		91.7	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		88.1	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		83.1	ug/L	6.98	23.3
122-66-7	Azobenzene		95.5	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		81.9	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		82.8	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		92.9	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		96.7	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		114	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		108	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		105	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		99.9	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		94.4	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		111	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		113	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		109	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		88.6	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		93.7	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		115	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		95.6	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		104	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		108	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		94.2	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		105	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		125	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		102	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		65.6	ug/L	6.98	23.3
83-32-9	Acenaphthene		105	ug/L	0.698	2.33
208-96-8	Acenaphthylene		104	ug/L	0.698	2.33
62-53-3	Aniline		100	ug/L	9.77	23.3
120-12-7	Anthracene		99.0	ug/L	0.698	2.33
1912-24-9	Atrazine		116	ug/L	6.98	23.3
92-87-5	Benzidine		165	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		103	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		102	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene		103	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		91.8	ug/L	0.698	2.33

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Sample Summary**

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SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203783015	Date Received: 05/05/2017 09:00	
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: CAMO-17-132306MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 18:16	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0813.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		108	ug/L	0.698	2.33
65-85-0	Benzoic acid		150	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		94.7	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		86.0	ug/L	6.98	23.3
218-01-9	Chrysene		103	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		89.1	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		81.4	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		94.7	ug/L	0.698	2.33
132-64-9	Dibenzofuran		98.9	ug/L	6.98	23.3
84-66-2	Diethylphthalate		94.1	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		99.6	ug/L	6.98	23.3
88-85-7	Dinoseb	U	23.3	ug/L	6.98	23.3
122-39-4	Diphenylamine		90.3	ug/L	6.98	23.3
206-44-0	Fluoranthene		114	ug/L	0.698	2.33
86-73-7	Fluorene		103	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		92.9	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		84.3	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		84.9	ug/L	6.98	23.3
67-72-1	Hexachloroethane		82.1	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		96.8	ug/L	0.698	2.33
78-59-1	Isophorone		96.1	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		86.3	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	23.3	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	23.3	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine		92.1	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		102	ug/L	6.98	23.3
91-20-3	Naphthalene		94.7	ug/L	0.698	2.33
98-95-3	Nitrobenzene		97.5	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	23.3	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		129	ug/L	6.98	23.3
85-01-8	Phenanthrene		99.5	ug/L	0.698	2.33
108-95-2	Phenol		63.5	ug/L	6.98	23.3
129-00-0	Pyrene		86.2	ug/L	0.698	2.33
110-86-1	Pyridine		79.6	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		97.0	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		99.9	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		93.9	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		77.4	ug/L	6.98	23.3

**Semi-Volatile
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Sample Summary**

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SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203783015	Date Received: 05/05/2017 09:00	
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: CAMO-17-132306MS	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 18:16	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0813.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		93.4	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		132	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		94.6	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		110	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		118	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	233	233	ug/L 100	(32%-124%)
2-Fluorobiphenyl	99.1	116	ug/L 85	(32%-112%)
2-Fluorophenol	158	233	ug/L 68	(15%-88%)
Nitrobenzene-d5	103	116	ug/L 89	(36%-115%)
Phenol-d5	122	233	ug/L 52	(15%-91%)
p-Terphenyl-d14	90.1	116	ug/L 77	(36%-121%)

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

SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203783016	Date Received: 05/05/2017 09:00	
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: CAMO-17-132306MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 18:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0814.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
95-94-3	1,2,4,5-Tetrachlorobenzene		86.7	ug/L	6.98	23.3
120-82-1	1,2,4-Trichlorobenzene		83.9	ug/L	6.98	23.3
95-50-1	1,2-Dichlorobenzene		78.2	ug/L	6.98	23.3
122-66-7	Azobenzene		88.8	ug/L	6.98	23.3
	<i>1,2-Diphenylhydrazine</i>					
541-73-1	1,3-Dichlorobenzene		77.2	ug/L	6.98	23.3
106-46-7	1,4-Dichlorobenzene		77.0	ug/L	6.98	23.3
123-91-1	1,4-Dioxane		88.7	ug/L	6.98	23.3
90-12-0	1-Methylnaphthalene		91.9	ug/L	0.698	2.33
58-90-2	2,3,4,6-Tetrachlorophenol		107	ug/L	6.98	23.3
95-95-4	2,4,5-Trichlorophenol		103	ug/L	6.98	23.3
88-06-2	2,4,6-Trichlorophenol		99.3	ug/L	6.98	23.3
120-83-2	2,4-Dichlorophenol		94.6	ug/L	6.98	23.3
105-67-9	2,4-Dimethylphenol		90.7	ug/L	6.98	23.3
51-28-5	2,4-Dinitrophenol		105	ug/L	11.6	46.5
121-14-2	2,4-Dinitrotoluene		106	ug/L	6.98	23.3
606-20-2	2,6-Dinitrotoluene		101	ug/L	6.98	23.3
91-58-7	2-Chloronaphthalene		84.0	ug/L	0.953	2.33
95-57-8	2-Chlorophenol		88.4	ug/L	6.98	23.3
534-52-1	2-Methyl-4,6-dinitrophenol		106	ug/L	6.98	23.3
91-57-6	2-Methylnaphthalene		90.3	ug/L	0.698	2.33
88-75-5	2-Nitrophenol		101	ug/L	6.98	23.3
91-94-1	3,3'-Dichlorobenzidine		99.4	ug/L	6.98	23.3
101-55-3	4-Bromophenylphenylether		87.5	ug/L	6.98	23.3
59-50-7	Parachlorometa cresol		99.9	ug/L	6.98	23.3
	<i>4-Chloro-3-methylphenol</i>					
106-47-8	4-Chloroaniline		117	ug/L	7.67	23.3
7005-72-3	4-Chlorophenylphenylether		96.0	ug/L	6.98	23.3
100-02-7	4-Nitrophenol		63.0	ug/L	6.98	23.3
83-32-9	Acenaphthene		98.7	ug/L	0.698	2.33
208-96-8	Acenaphthylene		97.9	ug/L	0.698	2.33
62-53-3	Aniline		93.1	ug/L	9.77	23.3
120-12-7	Anthracene		93.0	ug/L	0.698	2.33
1912-24-9	Atrazine		109	ug/L	6.98	23.3
92-87-5	Benzidine		143	ug/L	9.07	23.3
56-55-3	Benzo(a)anthracene		96.2	ug/L	0.698	2.33
50-32-8	Benzo(a)pyrene		95.5	ug/L	0.698	2.33
205-99-2	Benzo(b)fluoranthene		96.2	ug/L	0.698	2.33
191-24-2	Benzo(ghi)perylene		86.9	ug/L	0.698	2.33

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Sample Summary**

SDG Number:	2017-1476	Date Collected:	05/03/2017 12:24	Matrix:	W
Lab Sample ID:	1203783016	Date Received:	05/05/2017 09:00		
Client Sample:	QC for batch 1662354	Client:	ARSL004	Project:	QC
Client ID:	CAMO-17-132306MSD	Method:	SW846 3510C/8270D	SOP Ref:	GL-OA-E-009
Batch ID:	1662355	Inst:	MSD5.I	Dilution:	1
Run Date:	05/08/2017 18:46	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	05/08/2017 07:50	Aliquot:	430 mL	Final Volume:	1 mL
Data File:	s050817.B\s5e0814.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
207-08-9	Benzo(k)fluoranthene		100	ug/L	0.698	2.33
65-85-0	Benzoic acid		134	ug/L	14.0	46.5
100-51-6	Benzyl alcohol		89.9	ug/L	6.98	23.3
85-68-7	Butylbenzylphthalate		79.2	ug/L	6.98	23.3
218-01-9	Chrysene		95.6	ug/L	0.698	2.33
84-74-2	Di-n-butylphthalate		83.4	ug/L	6.98	23.3
117-84-0	Di-n-octylphthalate		75.7	ug/L	6.98	23.3
53-70-3	Dibenzo(a,h)anthracene		90.0	ug/L	0.698	2.33
132-64-9	Dibenzofuran		92.0	ug/L	6.98	23.3
84-66-2	Diethylphthalate		87.6	ug/L	6.98	23.3
131-11-3	Dimethylphthalate		93.9	ug/L	6.98	23.3
88-85-7	Dinoseb	U	23.3	ug/L	6.98	23.3
122-39-4	Diphenylamine		83.9	ug/L	6.98	23.3
206-44-0	Fluoranthene		106	ug/L	0.698	2.33
86-73-7	Fluorene		95.5	ug/L	0.698	2.33
118-74-1	Hexachlorobenzene		87.7	ug/L	6.98	23.3
87-68-3	Hexachlorobutadiene		77.9	ug/L	6.98	23.3
77-47-4	Hexachlorocyclopentadiene		81.1	ug/L	6.98	23.3
67-72-1	Hexachloroethane		75.2	ug/L	6.98	23.3
193-39-5	Indeno(1,2,3-cd)pyrene		92.1	ug/L	0.698	2.33
78-59-1	Isophorone		91.1	ug/L	8.14	23.3
62-75-9	N-Methyl-N-nitrosomethylamine		82.2	ug/L	6.98	23.3
924-16-3	N-Nitrosodi-n-butylamine	U	23.3	ug/L	6.98	23.3
55-18-5	N-Nitrosodiethylamine	U	23.3	ug/L	6.98	23.3
621-64-7	N-Nitrosodi--n-propylamine		85.5	ug/L	6.98	23.3
	<i>N-Nitrosodipropylamine</i>					
930-55-2	N-Nitrosopyrrolidine		96.3	ug/L	6.98	23.3
91-20-3	Naphthalene		89.6	ug/L	0.698	2.33
98-95-3	Nitrobenzene		92.8	ug/L	6.98	23.3
608-93-5	Pentachlorobenzene	U	23.3	ug/L	6.98	23.3
87-86-5	Pentachlorophenol		119	ug/L	6.98	23.3
85-01-8	Phenanthrene		93.5	ug/L	0.698	2.33
108-95-2	Phenol		60.5	ug/L	6.98	23.3
129-00-0	Pyrene		79.8	ug/L	0.698	2.33
110-86-1	Pyridine		76.4	ug/L	6.98	23.3
108-60-1	bis(2-Chloro-1-methylethyl)ether		90.0	ug/L	6.98	23.3
111-91-1	bis(2-Chloroethoxy)methane		95.3	ug/L	6.98	23.3
111-44-4	bis(2-Chloroethyl) ether		89.5	ug/L	6.98	23.3
117-81-7	bis(2-Ethylhexyl)phthalate		70.5	ug/L	6.98	23.3

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SDG Number: 2017-1476	Date Collected: 05/03/2017 12:24	Matrix: W
Lab Sample ID: 1203783016	Date Received: 05/05/2017 09:00	
Client Sample: QC for batch 1662354	Client: ARSL004	Project: QC
Client ID: CAMO-17-132306MSD	Method: SW846 3510C/8270D	SOP Ref: GL-OA-E-009
Batch ID: 1662355	Inst: MSD5.I	Dilution: 1
Run Date: 05/08/2017 18:46	Analyst: JMB3	Inj. Vol: 1 uL
Prep Date: 05/08/2017 07:50	Aliquot: 430 mL	Final Volume: 1 mL
Data File: s050817.B\s5e0814.D	Column: DB-5ms	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
65794-96-9	m,p-Cresols		88.6	ug/L	8.60	23.3
99-09-2	3-Nitroaniline		123	ug/L	6.98	23.3
	<i>m-Nitroaniline</i>					
95-48-7	o-Cresol		88.9	ug/L	6.98	23.3
88-74-4	2-Nitroaniline		102	ug/L	6.98	23.3
	<i>o-Nitroaniline</i>					
100-01-6	4-Nitroaniline		110	ug/L	6.98	23.3
	<i>p-Nitroaniline</i>					

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
2,4,6-Tribromophenol	218	233	ug/L	94 (32%-124%)
2-Fluorobiphenyl	93.7	116	ug/L	81 (32%-112%)
2-Fluorophenol	149	233	ug/L	64 (15%-88%)
Nitrobenzene-d5	97.6	116	ug/L	84 (36%-115%)
Phenol-d5	114	233	ug/L	49 (15%-91%)
p-Terphenyl-d14	81.9	116	ug/L	70 (36%-121%)

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorates by LCMSMS
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1476
Work Order #: 422436**

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: SW-846:6850

Prep Method: SW-846:6850

Analytical Batch Number: 1662828

Prep Batch Number: 1662825

Sample Analysis

Sample ID	Client ID
422436001	422436001 (CAMO-17-132216)
422436005	422436005 (CAMO-17-132325)
422436008	422436008 (CAMO-17-132338)
1203784065	Interference Check Sample (ICS)
1203784061	Method Blank (MB)
1203784062	Laboratory Control Sample (LCS)
1203784063	422310001(CASA-17-132320) Matrix Spike (MS)
1203784064	422310001(CASA-17-132320) 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# 14.

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

All associated initial calibration verification standard(s) (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 422310001 (CASA-17-132320) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS 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.

Internal Standard Area Acceptance

The internal 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 DOD QSM 5.0, has been used. In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

Technical Information

Holding Time Specifications

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

There was a mis-injection of sample 1203784064 (CASA-17-132320MSD). The re-analysis met all acceptance criteria, and the data are reported.

Miscellaneous Information

Data Exception (DER) Documentation

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

Manual Integrations

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 internally corrected for using Perchlorate-O (18).

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: 2017-1476 GEL Work Order: 422436

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 11 MAY 2017

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-17-132216Date Received: 05-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 422436001Date Filtered: 08-MAY-17Injection 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	0.345	ug/L		1	08-MAY-17 19:29	per0508022a
	Perchlorate Isotope Ratio			2.94			1	08-MAY-17 19:29	per0508022a
14797-73-0	Perchlorate-101	.05	.2	0.346	ug/L		1	08-MAY-17 19:29	per0508022a
	Perchlorate-O(18)			0.446	ug/L		1	08-MAY-17 19:29	per0508022a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-17-132325Date Received: 05-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 422436005Date Filtered: 08-MAY-17Injection 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	0.347	ug/L		1	08-MAY-17 20:07	per0508026a
	Perchlorate Isotope Ratio			2.85			1	08-MAY-17 20:07	per0508026a
14797-73-0	Perchlorate-101	.05	.2	0.359	ug/L		1	08-MAY-17 20:07	per0508026a
	Perchlorate-O(18)			0.420	ug/L		1	08-MAY-17 20:07	per0508026a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAMO-17-132338Date Received: 05-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 422436008Date Filtered: 08-MAY-17Injection 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	0.335	ug/L		1	08-MAY-17 20:16	per0508027a
	Perchlorate Isotope Ratio			2.89			1	08-MAY-17 20:16	per0508027a
14797-73-0	Perchlorate-101	.05	.2	0.341	ug/L		1	08-MAY-17 20:16	per0508027a
	Perchlorate-O(18)			0.437	ug/L		1	08-MAY-17 20:16	per0508027a

^ 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): 2017-1476

Extract Batch Code: 1662825

Date Filtered: 08-MAY-17

Matrix: WATER

Sample ID: 1203784062

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.192	ug/L	96		85 - 115
Perchlorate Isotope Ratio		2.99				-
Perchlorate-101	0.200	.19	ug/L	95		85 - 115
Perchlorate-O(18)		.452	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): 2017-1476

Extract Batch Code: 1662825

Date Extracted: 08-MAY-17

GEL MS/PS ID: 1203784063

Client ID: CASA-17-132320

GEL MSD/PSD ID: 1203784064

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	0.398	ug/L	0.617	110	.616	109	0	30	75 - 125
Perchlorate Isotope Ratio	0	2.87		3.02		3.02		0		-
Perchlorate-101	0.200	0.409	ug/L	0.602	97	.59	90	2	30	75 - 125
Perchlorate-O(18)	0	0.449	ug/L	0.434		.51		16		-

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

Quality Control Data

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 08-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 1203784061Date Filtered: 08-MAY-17Injection 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	08-MAY-17 18:04	per0508013a
	Perchlorate Isotope Ratio						1	08-MAY-17 18:04	per0508013a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	08-MAY-17 18:04	per0508013a
	Perchlorate-O(18)			0.462	ug/L		1	08-MAY-17 18:04	per0508013a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: EPA 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 08-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 1203784062Date Filtered: 08-MAY-17Injection 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	0.192	ug/L	J	1	08-MAY-17 18:13	per0508014a
	Perchlorate Isotope Ratio			2.99			1	08-MAY-17 18:13	per0508014a
14797-73-0	Perchlorate-101	.05	.2	0.190	ug/L	J	1	08-MAY-17 18:13	per0508014a
	Perchlorate-O(18)			0.452	ug/L		1	08-MAY-17 18:13	per0508014a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2017-1476GEL Sample ID: 1203784065Date Filtered: 08-MAY-17Injection 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	0.199	ug/L	J	1	08-MAY-17 18:23	per0508015a
	Perchlorate Isotope Ratio			2.73			1	08-MAY-17 18:23	per0508015a
14797-73-0	Perchlorate-101	.05	.2	0.215	ug/L		1	08-MAY-17 18:23	per0508015a
	Perchlorate-O(18)			0.485	ug/L		1	08-MAY-17 18:23	per0508015a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CASA-17-132320MSDate Received: 04-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 1203784063Date Filtered: 08-MAY-17Injection 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	0.617	ug/L		1	08-MAY-17 18:42	per0508017a
	Perchlorate Isotope Ratio			3.02			1	08-MAY-17 18:42	per0508017a
14797-73-0	Perchlorate-101	.05	.2	0.602	ug/L		1	08-MAY-17 18:42	per0508017a
	Perchlorate-O(18)			0.434	ug/L		1	08-MAY-17 18:42	per0508017a

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

*Concentration =

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

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1662825Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CASA-17-132320MSDDate Received: 04-MAY-17GEL Job No (SDG): 2017-1476GEL Sample ID: 1203784064Date Filtered: 08-MAY-17Injection 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	0.616	ug/L		1	09-MAY-17 18:35	per0509013a
	Perchlorate Isotope Ratio			3.02			1	09-MAY-17 18:35	per0509013a
14797-73-0	Perchlorate-101	.05	.2	0.590	ug/L		1	09-MAY-17 18:35	per0509013a
	Perchlorate-O(18)			0.510	ug/L		1	09-MAY-17 18:35	per0509013a

^ 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 =

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

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1476
Work Order #: 422436

Sample ID	Client ID
422436001	CAMO-17-132216
422436002	CAMO-17-132236
422436005	CAMO-17-132325
422436006	CAMO-17-132334
422436007	CAMO-17-132337
422436008	CAMO-17-132338
1203783050	Method Blank (MB) ICP
1203783051	Laboratory Control Sample (LCS)
1203783054	422436001(CAMO-17-132216L) Serial Dilution (SD)
1203783052	422436001(CAMO-17-132216D) Sample Duplicate (DUP)
1203783053	422436001(CAMO-17-132216S) Matrix Spike (MS)
1203783110	Method Blank (MB) ICP-MS
1203783111	Laboratory Control Sample (LCS)
1203783114	422436001(CAMO-17-132216L) Serial Dilution (SD)
1203783112	422436001(CAMO-17-132216D) Sample Duplicate (DUP)
1203783113	422436001(CAMO-17-132216S) Matrix Spike (MS)
1203784145	Method Blank (MB) CVAA
1203784146	Laboratory Control Sample (LCS)
1203784151	422436001(CAMO-17-132216L) Serial Dilution (SD)
1203784147	422436001(CAMO-17-132216D) Sample Duplicate (DUP)
1203784149	422436001(CAMO-17-132216S) Matrix Spike (MS)

Sample Analysis

Samples 422436001,002,005,006,007 and 008 in this SDG were analyzed for metals and mercury on an "as received" basis.

Method/Analysis Information

Analytical Batch:	1662457, 1662480, 1662863 and 1669920
Prep Batch :	1662456, 1662479 and 1662854
Standard Operating Procedures:	GL-MA-E-013 REV# 28, GL-MA-E-006 REV# 13, GL-MA-E-014 REV# 29, GL-MA-E-010 REV# 34 and GL-GC-E-107 REV# 10
Analytical Method:	SW846 3005A/6010C, SW846 3005A/6020A, EPA 245.2 1974 and SM:A2340B
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-ICP was performed on a PE 7300 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 300X 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 PQL standard recoveries for SW846 6010C or 6010D met the control limits with the exception of calcium and zinc. Client sample concentrations were less than the MDL or greater than two times the PQL; therefore the data were not adversely affected. 422436001 (CAMO-17-132216), 422436005 (CAMO-17-132325) and 422436008 (CAMO-17-132338)-ICP.

ICSA/ICSAB Statement

All interference check samples (ICSA and ICSAB) associated with this SDG met the established acceptance criteria. However, the ICSA contained analyte concentrations which are verified trace impurities indigenous to the purchased standard.

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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

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: 422436001 (CAMO-17-132216)-ICP, ICP-MS and 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 were 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.

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

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

Certification Statement

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

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: 2017-1476 GEL Work Order: 422436

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, MDC or LOD.

Review/Validation

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

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

Signature:



Name: Nik-Cole Elmore

Date: 31 MAY 2017

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436001**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132216**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 10:42	050917W2-7	1662863

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 422436001

BASIS: As Received

DATE COLLECTED 03-MAY-17

CLIENT ID: CAMO-17-132216

LEVEL: Low

DATE RECEIVED 05-MAY-17

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	05/24/17 16:14	052417A-1	1662457
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	05/08/17 21:36	170508-4	1662480
7440-38-2	Arsenic	2.02	ug/L	J	2	5	5	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7440-39-3	Barium	24.9	ug/L		1	5	5	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7440-70-2	Calcium	10400	ug/L		50	200	200	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-47-3	Chromium	5.14	ug/L	J	3	10	10	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	PRB	05/09/17 23:56	170509-6	1662480
7439-95-4	Magnesium	3500	ug/L		110	300	300	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7439-98-7	Molybdenum	1.08	ug/L		0.2	0.5	0.5	1	MS	PRB	05/10/17 15:18	170510-5	1662480
7440-02-0	Nickel	0.702	ug/L	J	0.6	2	2	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7440-09-7	Potassium	1860	ug/L		50	150	150	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7631-86-9	Silica	69300	ug/L		53	213	213	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:15	170508-3	1662480
7440-23-5	Sodium	9910	ug/L		100	300	300	1	P	HSC	05/25/17 10:02	052517-2	1662457
7440-24-6	Strontium	45	ug/L		1	5	5	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	PRB	05/09/17 23:56	170509-6	1662480
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-61-1	Uranium	0.618	ug/L		0.067	0.2	0.2	1	MS	PRB	05/09/17 23:56	170509-6	1662480
7440-62-2	Vanadium	8.44	ug/L		1	5	5	1	P	HSC	05/24/17 16:14	052417A-1	1662457
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	05/24/17 16:14	052417A-1	1662457

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 422436001**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132216**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	40.3	mg/L		0.453	1.24	1.24	1		JJ2	05/31/17 13:37		1669920

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662457	1662456	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662480	1662479	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436002**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132236**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 10:50	050917W2-7	1662863

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436005**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132325**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 10:52	050917W2-7	1662863

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 422436005

BASIS: As Received

DATE COLLECTED 03-MAY-17

CLIENT ID: CAMO-17-132325

LEVEL: Low

DATE RECEIVED 05-MAY-17

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	05/24/17 16:08	052417A-1	1662457
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	05/08/17 21:44	170508-4	1662480
7440-38-2	Arsenic	2.13	ug/L	J	2	5	5	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7440-39-3	Barium	21.1	ug/L		1	5	5	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7440-70-2	Calcium	15700	ug/L		50	200	200	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-47-3	Chromium	7.88	ug/L	J	3	10	10	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	PRB	05/10/17 00:05	170509-6	1662480
7439-95-4	Magnesium	5360	ug/L		110	300	300	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7439-98-7	Molybdenum	1.38	ug/L		0.2	0.5	0.5	1	MS	PRB	05/10/17 15:26	170510-5	1662480
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7440-09-7	Potassium	1890	ug/L		50	150	150	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7631-86-9	Silica	66900	ug/L		53	213	213	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:37	170508-3	1662480
7440-23-5	Sodium	13400	ug/L		100	300	300	1	P	HSC	05/25/17 09:56	052517-2	1662457
7440-24-6	Strontium	85.5	ug/L		1	5	5	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	PRB	05/10/17 00:05	170509-6	1662480
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-61-1	Uranium	1.32	ug/L		0.067	0.2	0.2	1	MS	PRB	05/10/17 00:05	170509-6	1662480
7440-62-2	Vanadium	6.8	ug/L		1	5	5	1	P	HSC	05/24/17 16:08	052417A-1	1662457
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	05/24/17 16:08	052417A-1	1662457

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 422436005**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132325**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	61.3	mg/L		0.453	1.24	1.24	1		JJ2	05/31/17 13:37		1669920

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662457	1662456	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662480	1662479	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436006**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132334**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 10:57	050917W2-7	1662863

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436007**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132337**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 10:58	050917W2-7	1662863

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

AV EPA 245.2 1974

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:** EPA**SAMPLE ID:** 422436008**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132338**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	AXS5	05/09/17 11:00	050917W2-7	1662863

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476

CONTRACT: ESHL00114

METHOD TYPE: SW846

SAMPLE ID: 422436008

BASIS: As Received

DATE COLLECTED 03-MAY-17

CLIENT ID: CAMO-17-132338

LEVEL: Low

DATE RECEIVED 05-MAY-17

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	05/24/17 16:11	052417A-1	1662457
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	05/08/17 21:46	170508-4	1662480
7440-38-2	Arsenic	2.08	ug/L	J	2	5	5	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7440-39-3	Barium	20.9	ug/L		1	5	5	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-43-9	Cadmium	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7440-70-2	Calcium	15800	ug/L		50	200	200	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-47-3	Chromium	8.01	ug/L	J	3	10	10	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-50-8	Copper	10	ug/L	U	3	10	10	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	PRB	05/10/17 00:07	170509-6	1662480
7439-95-4	Magnesium	5320	ug/L		110	300	300	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7439-96-5	Manganese	10	ug/L	U	2	10	10	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7439-98-7	Molybdenum	1.46	ug/L		0.2	0.5	0.5	1	MS	PRB	05/10/17 15:27	170510-5	1662480
7440-02-0	Nickel	2	ug/L	U	0.6	2	2	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7440-09-7	Potassium	1880	ug/L		50	150	150	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7782-49-2	Selenium	5	ug/L	U	2	5	5	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7631-86-9	Silica	66100	ug/L		53	213	213	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-22-4	Silver	1	ug/L	U	0.3	1	1	1	MS	PRB	05/08/17 20:40	170508-3	1662480
7440-23-5	Sodium	13300	ug/L		100	300	300	1	P	HSC	05/25/17 09:59	052517-2	1662457
7440-24-6	Strontium	87.2	ug/L		1	5	5	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-28-0	Thallium	2	ug/L	U	0.6	2	2	1	MS	PRB	05/10/17 00:07	170509-6	1662480
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-61-1	Uranium	1.39	ug/L		0.067	0.2	0.2	1	MS	PRB	05/10/17 00:07	170509-6	1662480
7440-62-2	Vanadium	6.4	ug/L		1	5	5	1	P	HSC	05/24/17 16:11	052417A-1	1662457
7440-66-6	Zinc	10	ug/L	U	3.3	10	10	1	P	HSC	05/24/17 16:11	052417A-1	1662457

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2017-1476**CONTRACT:** ESHL00114**METHOD TYPE:****SAMPLE ID:** 422436008**BASIS:** As Received**DATE COLLECTED** 03-MAY-17**CLIENT ID:** CAMO-17-132338**LEVEL:** Low**DATE RECEIVED** 05-MAY-17**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	61.3	mg/L		0.453	1.24	1.24	1		JJ2	05/31/17 13:37		1669920

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1662457	1662456	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662480	1662479	SW846 3005A	50	mL	50	mL	05/05/17	CXW4
1662863	1662854	EPA 245.1/245.2 Prep	20	mL	20	mL	05/08/17	JXH5

***Analytical Methods:**

P SW846 3005A/6010C
MS SW846 3005A/6020A
AV EPA 245.2 1974

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2017-1476

Contract: ESHL00114

Matrix: W

<u>Sample ID</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Acceptance Window</u>	<u>Conc Qual</u>	<u>M*</u>	<u>MDL</u>	<u>RDL</u>
1203783050	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	53	ug/L	+/-213	U	P	53	213
	Sodium	100	ug/L	+/-300	U	P	100	300
	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Copper	3	ug/L	+/-10	U	P	3	10
	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
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Barium	1	ug/L	+/-5	U	P	1	5
	Aluminum	68	ug/L	+/-200	U	P	68	200
1203783110	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	2	ug/L	+/-5	U	MS	2	5
	Cadmium	0.3	ug/L	+/-1	U	MS	0.3	1
	Chromium	3	ug/L	+/-10	U	MS	3	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Molybdenum	0.2	ug/L	+/-0.5	U	MS	0.2	0.5
	Nickel	0.6	ug/L	+/-2	U	MS	0.6	2
	Selenium	2	ug/L	+/-5	U	MS	2	5
	Silver	0.3	ug/L	+/-1	U	MS	0.3	1
	Thallium	0.6	ug/L	+/-2	U	MS	0.6	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1203784145	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. 2017-1476 Client ID CAMO-17-132216S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 422436001 Spike ID: 1203783053

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Aluminum	ug/L	75-125	4960		68	U	5000	99.2		P
Barium	ug/L	75-125	527		24.9		500	100		P
Beryllium	ug/L	75-125	506		1	U	500	101		P
Boron	ug/L	75-125	526		15	U	500	103		P
Calcium	ug/L	75-125	15400		10400		5000	101		P
Cobalt	ug/L	75-125	508		1	U	500	102		P
Copper	ug/L	75-125	536		3	U	500	107		P
Iron	ug/L	75-125	5250		30	U	5000	105		P
Magnesium	ug/L	75-125	8560		3500		5000	101		P
Manganese	ug/L	75-125	507		2	U	500	101		P
Potassium	ug/L	75-125	6930		1860		5000	101		P
Silica	ug/L		80600		69300		10700	105	N/A	P
Sodium	ug/L	75-125	15000		9910		5000	103		P
Strontium	ug/L	75-125	559		45		500	103		P
Tin	ug/L	75-125	505		2.5	U	500	101		P
Vanadium	ug/L	75-125	524		8.44		500	103		P
Zinc	ug/L	75-125	487		3.3	U	500	97.4		P

*Analytical Methods:

P SW846 3005A/6010C

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1476 Client ID CAMO-17-132216S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 422436001 Spike ID: 1203783113

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Antimony	ug/L	75-125	52.5		1	U	50	105		MS
Arsenic	ug/L	75-125	53.5		2.02	J	50	103		MS
Cadmium	ug/L	75-125	50.9		0.3	U	50	102		MS
Chromium	ug/L	75-125	55.3		5.14	J	50	100		MS
Lead	ug/L	75-125	49.8		0.5	U	50	99.6		MS
Molybdenum	ug/L	75-125	56.4		1.08		50	111		MS
Nickel	ug/L	75-125	51.4		0.702	J	50	101		MS
Selenium	ug/L	75-125	51.5		2	U	50	102		MS
Silver	ug/L	75-125	52.7		0.3	U	50	105		MS
Thallium	ug/L	75-125	49.9		0.6	U	50	99.3		MS
Uranium	ug/L	75-125	52.5		0.618		50	104		MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

-5a-

Matrix Spike Summary

SDG NO. 2017-1476 Client ID CAMO-17-132216S

Contract: ESHL00114 Level: Low

Matrix: WATER % Solids:

Sample ID: 422436001 Spike ID: 1203784149

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.05		0.067	U	2	102		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-1476

Lab Code: GEL

Contract: ESHL00114

Client ID: CAMO-17-132216D

Matrix: WATER

Level: Low

Sample ID: 422436001

Duplicate ID: 1203783052

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	24.9		25.6		2.71		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L		15 U		15 U				P
Calcium	ug/L	+/-20%	10400		10600		1.8		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%	3500		3490		.272		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	1860		1860		.0753		P
Silica	ug/L	+/-20%	69300		71500		3.16		P
Sodium	ug/L	+/-20%	9910		10100		2.36		P
Strontium	ug/L	+/-20%	45		45.2		.472		P
Tin	ug/L		2.5 U		2.5 U				P
Vanadium	ug/L	+/-5	8.44		8.9		5.3		P
Zinc	ug/L		3.3 U		3.3 U				P

*Analytical Methods:

P SW846 3005A/6010C

Metals
-6-
Duplicate Sample Summary

SDG No.: 2017-1476

Lab Code: GEL

Contract: ESHL00114

Client ID: CAMO-17-132216D

Matrix: WATER

Level: Low

Sample ID: 422436001

Duplicate ID: 1203783112

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		2.02 J		2 U		200		MS
Cadmium	ug/L		0.3 U		0.3 U				MS
Chromium	ug/L	+/-10	5.14 J		5.19 J		1.05		MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	1.08		0.998		8.08		MS
Nickel	ug/L	+/-2	0.702 J		0.714 J		1.69		MS
Selenium	ug/L		2 U		2 U				MS
Silver	ug/L		0.3 U		0.3 U				MS
Thallium	ug/L		0.6 U		0.6 U				MS
Uranium	ug/L	+/- .2	0.618		0.563		9.31		MS

*Analytical Methods:

MS SW846 3005A/6020A

Metals
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Duplicate Sample Summary

SDG No.: 2017–1476**Lab Code:** GEL**Contract:** ESHL00114**Client ID:** CAMO–17–132216D**Matrix:** WATER**Level:** Low**Sample ID:** 422436001**Duplicate ID:** 1203784147**Percent Solids for Dup:** N/A

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

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1476

Contract: ESHL00114

Aqueous LCS Source:OS2I

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203783051								
	Strontium	ug/L	500	466		93.2	80-120	P
	Tin	ug/L	500	496		99.3	80-120	P
	Vanadium	ug/L	500	507		101	80-120	P
	Zinc	ug/L	500	476		95.2	80-120	P
	Sodium	ug/L	5000	4700		94.1	80-120	P
	Aluminum	ug/L	5000	4750		95	80-120	P
	Barium	ug/L	500	475		94.9	80-120	P
	Beryllium	ug/L	500	468		93.7	80-120	P
	Boron	ug/L	500	474		94.8	80-120	P
	Calcium	ug/L	5000	4720		94.4	80-120	P
	Cobalt	ug/L	500	484		96.8	80-120	P
	Copper	ug/L	500	509		102	80-120	P
	Iron	ug/L	5000	4760		95.3	80-120	P
	Magnesium	ug/L	5000	4730		94.6	80-120	P
	Manganese	ug/L	500	507		101	80-120	P
	Potassium	ug/L	5000	4860		97.3	80-120	P
	Silica	ug/L	10700	10200		95.7	80-120	P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1476

Contract: ESHL00114

Aqueous LCS Source:O2Si

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203783111								
	Antimony	ug/L	50	50.4		101	80-120	MS
	Arsenic	ug/L	50	51.8		104	80-120	MS
	Cadmium	ug/L	50	52.5		105	80-120	MS
	Chromium	ug/L	50	51		102	80-120	MS
	Lead	ug/L	50	50.7		101	80-120	MS
	Molybdenum	ug/L	50	52.3		105	80-120	MS
	Nickel	ug/L	50	51.8		104	80-120	MS
	Selenium	ug/L	50	52.5		105	80-120	MS
	Silver	ug/L	50	53.3		107	80-120	MS
	Thallium	ug/L	50	50.7		101	80-120	MS
	Uranium	ug/L	50	53.6		107	80-120	MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Laboratory Control Sample Summary

SDG NO. 2017-1476

Contract: ESHL00114

Aqueous LCS Source: GEL

Solid LCS Source:

<u>Sample ID</u>	<u>Analyte</u>	<u>Units</u>	<u>True Value</u>	<u>Result</u>	<u>C</u>	<u>% Recovery</u>	<u>Acceptance Limit</u>	<u>M*</u>
1203784146	Mercury	ug/L	2	2.01		100	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1476 Client ID CAMO-17-132216L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 422436001 Serial Dilution ID: 1203783054

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	24.9		23.4	J	6.009			P
Beryllium	1	U	5	U				P
Boron	15	U	75	U				P
Calcium	10400		9970		3.782		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	3500		3520		.626			P
Manganese	2	U	10	U				P
Potassium	1860		1700		8.303			P
Silica	69300		68300		1.411		10	P
Sodium	9910		10000		1.296		10	P
Strontium	45		44		2.213			P
Tin	2.5	U	12.5	U				P
Vanadium	8.44		9.69	J	14.782			P
Zinc	3.3	U	16.5	U				P

*Analytical Methods:

P SW846 3005A/6010C

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1476 Client ID CAMO-17-132216L

Contract: ESHL00114

Matrix: LIQUID Level: Low

Sample ID: 422436001 Serial Dilution ID: 1203783114

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	2.02	J	10	U	21.914			MS
Cadmium	.3	U	1.5	U				MS
Chromium	5.14	J	15	U	1.07			MS
Lead	.5	U	2.5	U				MS
Molybdenum	1.08		1.12	J	3.05			MS
Nickel	.702	J	3	U	27.493			MS
Selenium	2	U	10	U				MS
Silver	.3	U	1.5	U				MS
Thallium	.6	U	3	U				MS
Uranium	.618		.6	J	2.913			MS

*Analytical Methods:

MS SW846 3005A/6020A

METALS

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Serial Dilution Sample Summary

SDG NO. 2017-1476 **Client ID:** CAMO-17-132216L**Contract:** ESHL00114**Matrix:** LIQUID **Level:** Low**Sample ID:** 422436001 **Serial Dilution ID:** 1203784151

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

*Analytical Methods:

AV EPA 245.1/245.2

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
ARS International, LLC (ARSL)
SDG #: 2017-1476
Work Order #: 422436**

Method/Analysis Information

Product: Carbon and Total Organic

Analytical Batch: 1663112

Method: SW 9060 Total Organic Carbon

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW-846:9060:

Sample ID	Client ID
422436002	CAMO-17-132236
422436006	CAMO-17-132334
422436007	CAMO-17-132337
1203784880	Method Blank (MB)
1203784881	Laboratory Control Sample (LCS)
1203784882	422310002(CASA-17-132329) Sample Duplicate (DUP)
1203784883	422310002(CASA-17-132329) 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# 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 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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310002 (CASA-17-132329) 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 where applicable.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Cyanide and Total		
Analytical Batch:	1661857	Method:	WSP-CN(T)
Prep Batch :	1661856	Method:	EPA 335.4

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 335.4 1993:

Sample ID	Client ID
422436002	CAMO-17-132236
422436006	CAMO-17-132334
422436007	CAMO-17-132337
1203781590	Method Blank (MB)
1203781591	Laboratory Control Sample (LCS)
1203782269	422310002(CASA-17-132329) Sample Duplicate (DUP)
1203782270	422310002(CASA-17-132329) 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# 19.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310002 (CASA-17-132329) 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 where applicable.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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Method/Analysis Information

Product: Ion Chromatography
Analytical Batch: 1662746 **Method:** WSP-ANIONS

Sample Analysis

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

Sample ID	Client ID
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203783868	Method Blank (MB)
1203783869	Laboratory Control Sample (LCS)
1203783870	422310001(CASA-17-132320) Sample Duplicate (DUP)
1203783871	422310001(CASA-17-132320) 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# 25.

Preparation/Analytical Method Verification

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

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-5000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310001 (CASA-17-132320) 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 where applicable.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Manual Integrations

Samples 1203783870 (CASA-17-132320DUP), 1203783871 (CASA-17-132320PS), 422436001 (CAMO-17-132216), 422436005 (CAMO-17-132325) and 422436008 (CAMO-17-132338) 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:

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Method/Analysis Information

Product: Ammonia Nitrogen
Analytical Batch: 1661776 **Method:** NH3
Prep Batch : 1661775 **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
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203781425	Method Blank (MB)
1203781426	Laboratory Control Sample (LCS)
1203783330	422310001(CASA-17-132320) Sample Duplicate (DUP)
1203783331	422310001(CASA-17-132320) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310001 (CASA-17-132320) 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 where applicable.

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

Sample1203781425 (MB) was 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:	Total Kjeldahl Nitrogen		
Analytical Batch:	1662576	Method:	TKN
Prep Batch :	1662574	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
422436002	CAMO-17-132236
422436006	CAMO-17-132334
422436007	CAMO-17-132337
1203783401	Method Blank (MB)
1203783402	Laboratory Control Sample (LCS)
1203783405	422310002(CASA-17-132329) Sample Duplicate (DUP)
1203783406	422310002(CASA-17-132329) Matrix Spike (MS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 14.

Preparation/Analytical Method Verification

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

Calibration Information

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

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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310002 (CASA-17-132329) was 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 where applicable.

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

Samples 1203783401 (MB), 1203783402 (LCS), 1203783405 (CASA-17-132329DUP) and 1203783406 (CASA-17-132329MS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was 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: Nitrate Nitrite by Cadmium Reduction

Analytical Batch: 1661895

Method: NO3NO2

Sample Analysis

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

Sample ID	Client ID
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203781709	Method Blank (MB)
1203781710	Laboratory Control Sample (LCS)
1203783193	422310001(CASA-17-132320) Sample Duplicate (DUP)
1203783196	422310001(CASA-17-132320) 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.

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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310001 (CASA-17-132320) 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 where applicable.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Total Phosphorus		
Analytical Batch:	1662570	Method:	PO4
Prep Batch :	1662568	Method:	EPA 365.4 Prep

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 365.4 1974:

Sample ID	Client ID
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203783387	Method Blank (MB)
1203783388	Laboratory Control Sample (LCS)
1203783390	422310001(CASA-17-132320) Sample Duplicate (DUP)
1203783392	422310001(CASA-17-132320) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422310001 (CASA-17-132320) 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 where applicable.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Solids and Total Dissolved

Analytical Batch: 1663153

Method: TDS

Sample Analysis

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

Sample ID	Client ID
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203784949	Method Blank (MB)
1203784950	Laboratory Control Sample (LCS)
1203784953	422436001(CAMO-17-132216) 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 Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Consecutive Weight Checks

All consecutive weight checks were met.

Quality Control (QC) Designation

Sample 422436001 (CAMO-17-132216) 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: Specific Conductivity

Analytical Batch: 1663499

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
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203785786	Laboratory Control Sample (LCS)
1203785788	422436001(CAMO-17-132216) 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# 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 Titration and Ion analysis was performed on a Orion 160 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Calibration Verification Information

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

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422436001 (CAMO-17-132216) 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: 1665849 **Method:** PH

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 150.1 1982:

Sample ID	Client ID
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203791298	Laboratory Control Sample (LCS)
1203791299	422436001(CAMO-17-132216) 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# 22.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422436001 (CAMO-17-132216) 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
1203791299 (CAMO-17-132216DUP)	pH	Received 05-MAY-17, out of holding 03-MAY-17
422436001 (CAMO-17-132216)	pH	Received 05-MAY-17, out of holding 03-MAY-17
422436005 (CAMO-17-132325)	pH	Received 05-MAY-17, out of holding 03-MAY-17
422436008 (CAMO-17-132338)	pH	Received 05-MAY-17, out of holding 03-MAY-17

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) 1633320 was generated for samples 422436001 (CAMO-17-132216), 422436005 (CAMO-17-132325), 422436008 (CAMO-17-132338) and 1203791299 (CAMO-17-132216DUP) 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: 1665848 **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
422436001	CAMO-17-132216
422436005	CAMO-17-132325
422436008	CAMO-17-132338
1203791289	Laboratory Control Sample (LCS)
1203791292	422436001(CAMO-17-132216) Sample Duplicate (DUP)
1203791295	422436001(CAMO-17-132216) 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# 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 Titration and Ion analysis was performed on a Electronic bottle-top buret.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample Duplicate (LCSD)

An LCSD was not used in place of matrix QC.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

Sample 422436001 (CAMO-17-132216) 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 where applicable.

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

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: 2017-1476 GEL Work Order: 422436


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, MDC or LOD.

Review/Validation

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

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

Signature: 

Name: Aubrey Kingsbury

Date: 31 MAY 2017

Title: Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132216
Sample ID: 422436001
Matrix: W
Collect Date: 03-MAY-17 12:24
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	05/07/17	0347	1662746	1
Chloride		1.88	0.067	0.200	mg/L		1					
Fluoride		0.163	0.033	0.100	mg/L		1					
Sulfate		2.10	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia	J	0.0296	0.017	0.050	mg/L	1.00	1	KLP1	05/08/17	1318	1661776	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.366	0.017	0.050	mg/L		1	AXH3	05/09/17	1211	1661895	3
PO4 "As Received"												
Phosphorus, Total as P	J	0.0368	0.020	0.050	mg/L	1.00	1	KLP1	05/18/17	1015	1662570	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		130	3.40	14.3	mg/L			KLP1	05/10/17	1501	1663153	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		60.0	1.45	4.00	mg/L			RXB5	05/17/17	1951	1665848	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		254	1.00	1.00	umhos/cm		1	VH1	05/12/17	1341	1663499	7
PH "As Received"												
pH at Temp 12.9C	H	8.26	0.010	0.100	SU		1	RXB5	05/17/17	1952	1665849	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	05/08/17	1155	1661775
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/17/17	1500	1662568

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132216
Sample ID: 422436001

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:350.1											
3	EPA:353.2											
4	EPA 365.4 1974											
5	EPA:160.1											
6	EPA:310.1											
7	EPA:120.1											
8	EPA 150.1 1982											

Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132236
Sample ID: 422436002
Matrix: W
Collect Date: 03-MAY-17 12:24
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	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	05/11/17	1201	1663112	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	05/08/17	1113	1661857	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl		0.170	0.033	0.100	mg/L	1.00	1	KLP1	05/09/17	1126	1662576	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/08/17	0926	1661856
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/08/17	1700	1662574

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132325
Sample ID: 422436005
Matrix: W
Collect Date: 03-MAY-17 10:33
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	05/07/17	0415	1662746	1
Chloride		2.34	0.067	0.200	mg/L		1					
Fluoride		0.147	0.033	0.100	mg/L		1					
Sulfate		4.47	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia		0.166	0.017	0.050	mg/L	1.00	1	KLP1	05/08/17	1319	1661776	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.371	0.017	0.050	mg/L		1	AXH3	05/09/17	1212	1661895	3
PO4 "As Received"												
Phosphorus, Total as P	J	0.041	0.020	0.050	mg/L	1.00	1	KLP1	05/18/17	1016	1662570	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		150	3.40	14.3	mg/L			KLP1	05/10/17	1501	1663153	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		84.6	1.45	4.00	mg/L			RXB5	05/17/17	1958	1665848	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		180	1.00	1.00	umhos/cm		1	VH1	05/12/17	1341	1663499	7
PH "As Received"												
pH at Temp 14.2C	H	8.28	0.010	0.100	SU		1	RXB5	05/17/17	1957	1665849	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	05/08/17	1155	1661775
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/17/17	1500	1662568

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132325
Sample ID: 422436005

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:350.1											
3	EPA:353.2											
4	EPA 365.4 1974											
5	EPA:160.1											
6	EPA:310.1											
7	EPA:120.1											
8	EPA 150.1 1982											

Notes:

Column headers are defined as follows:

DF: Dilution Factor

DL: Detection Limit

MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132334
Sample ID: 422436006
Matrix: W
Collect Date: 03-MAY-17 10:33
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	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	05/11/17	1245	1663112	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	05/08/17	1114	1661857	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	05/09/17	1127	1662576	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/08/17	0926	1661856
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/08/17	1700	1662574

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132337
Sample ID: 422436007
Matrix: W
Collect Date: 03-MAY-17 10:33
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	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	05/11/17	1353	1663112	1
Flow Injection Analysis												
WSP-CN(T) "As Received"												
Cyanide, Total	U	ND	1.67	5.00	ug/L	1.00	1	AXH3	05/08/17	1115	1661857	2
Nutrient Analysis												
TKN "As Received"												
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1.00	1	KLP1	05/09/17	1128	1662576	3

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 335.4	EPA 335.4 Total Cyanide	AXH3	05/08/17	0926	1661856
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/08/17	1700	1662574

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW-846:9060	
2	EPA 335.4 1993	
3	EPA:351.2	

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132338
Sample ID: 422436008
Matrix: W
Collect Date: 03-MAY-17 10:33
Receive Date: 05-MAY-17
Collector: Client

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
WSP-ANIONS "As Received"												
Bromide	U	ND	0.067	0.200	mg/L		1	MXL2	05/07/17	0444	1662746	1
Chloride		2.34	0.067	0.200	mg/L		1					
Fluoride		0.135	0.033	0.100	mg/L		1					
Sulfate		4.35	0.133	0.400	mg/L		1					
Nutrient Analysis												
NH3 "As Received"												
Nitrogen, Ammonia	J	0.0262	0.017	0.050	mg/L	1.00	1	KLP1	05/08/17	1319	1661776	2
NO3NO2 "As Received"												
Nitrogen, Nitrate/Nitrite		0.371	0.017	0.050	mg/L		1	AXH3	05/09/17	1213	1661895	3
PO4 "As Received"												
Phosphorus, Total as P	J	0.0354	0.020	0.050	mg/L	1.00	1	KLP1	05/18/17	1016	1662570	4
Solids Analysis												
TDS "As Received"												
Total Dissolved Solids		143	3.40	14.3	mg/L			KLP1	05/10/17	1501	1663153	5
Titration and Ion Analysis												
EPA 310.1 Total Alkalinity "As Received"												
Alkalinity, Total as CaCO3		83.6	1.45	4.00	mg/L			RXB5	05/17/17	2000	1665848	6
Carbonate alkalinity (CaCO3)	U	ND	1.45	4.00	mg/L							
EPA120.1 Specific Conductivity "As Received"												
Conductivity		180	1.00	1.00	umhos/cm		1	VH1	05/12/17	1342	1663499	7
PH "As Received"												
pH at Temp 14.0C	H	8.27	0.010	0.100	SU		1	RXB5	05/17/17	1959	1665849	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	05/08/17	1155	1661775
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/17/17	1500	1662568

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Certificate of Analysis

Report Date: May 31, 2017

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 Water Samples

Client SDG: 2017-1476

Client Sample ID: CAMO-17-132338
Sample ID: 422436008

Project: ESHL00114
Client ID: ARSL004

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
The following Analytical Methods were performed:												
Method	Description		Analyst Comments									
1	EPA:300.0											
2	EPA:350.1											
3	EPA:353.2											
4	EPA 365.4 1974											
5	EPA:160.1											
6	EPA:310.1											
7	EPA:120.1											
8	EPA 150.1 1982											

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Quality Control Summary

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QC Summary

Report Date: May 31, 2017

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

Contact: Mr. Keith Greene

Workorder: 422436

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1663112										
QC1203784882	422310002	DUP									
Total Organic Carbon Average		J	0.357	J	0.359	mg/L	0.559 ^	(+/-1.00)	TSM	05/11/17	09:49
QC1203784881	LCS										
Total Organic Carbon Average	10.0				9.58	mg/L		95.8 (80%-120%)		05/11/17	08:52
QC1203784880	MB										
Total Organic Carbon Average			U		ND	mg/L				05/11/17	08:41
QC1203784883	422310002	PS									
Total Organic Carbon Average	10.0	J	0.357		9.10	mg/L		87.5 (75%-125%)		05/11/17	10:33
Flow Injection Analysis											
Batch	1661857										
QC1203782269	422310002	DUP									
Cyanide, Total		U	ND	U	ND	ug/L	N/A		AXH3	05/08/17	11:04
QC1203781591	LCS										
Cyanide, Total	50.0				48.3	ug/L		96.6 (90%-110%)		05/08/17	10:42
QC1203781590	MB										
Cyanide, Total			U		ND	ug/L				05/08/17	10:41
QC1203782270	422310002	MS									
Cyanide, Total	100	U	ND		100	ug/L		100 (90%-110%)		05/08/17	11:05
Ion Chromatography											
Batch	1662746										
QC1203783870	422310001	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MXL2	05/07/17	01:51

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QC Summary

Workorder: 422436

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1662746										
Chloride		6.73		6.72	mg/L	0.0758		(0%-20%)	MXL2	05/07/17	01:51
Fluoride		0.311		0.312	mg/L	0.193	^	(+/-0.100)			
Sulfate		5.83		5.82	mg/L	0.129		(0%-20%)			
QC1203783869 LCS											
Bromide	1.25			1.25	mg/L		99.8	(80%-120%)		05/07/17	00:53
Chloride	5.00			4.87	mg/L		97.4	(80%-120%)			
Fluoride	2.50			2.52	mg/L		101	(80%-120%)			
Sulfate	10.0			10.1	mg/L		101	(80%-120%)			
QC1203783868 MB											
Bromide			U	ND	mg/L					05/07/17	00:24
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1203783871 422310001 PS											
Bromide	0.625	U	ND	0.693	mg/L		101	(75%-125%)		05/07/17	02:20
Chloride	2.50		6.73	9.53	mg/L		112	(75%-125%)			
Fluoride	1.25		0.311	1.55	mg/L		99.1	(75%-125%)			
Sulfate	5.00		5.83	11.1	mg/L		105	(75%-125%)			

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QC Summary

Workorder: 422436

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1661776										
QC1203783330	422310001	DUP									
Nitrogen, Ammonia		0.0617		0.104	mg/L	51.1	^	(+/-0.050)	KLP1	05/08/17	13:05
QC1203781426	LCS										
Nitrogen, Ammonia	1.00			1.03	mg/L			103 (90%-110%)		05/08/17	12:52
QC1203781425	MB										
Nitrogen, Ammonia			U	ND	mg/L					05/08/17	13:16
QC1203783331	422310001	MS									
Nitrogen, Ammonia	1.00	0.0617		1.09	mg/L			103 (90%-110%)		05/08/17	13:05
Batch	1661895										
QC1203783193	422310001	DUP									
Nitrogen, Nitrate/Nitrite		0.431		0.430	mg/L	0.232		(0%-20%)	AXH3	05/09/17	12:07
QC1203781710	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.963	mg/L			96.3 (90%-110%)		05/09/17	11:34
QC1203781709	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/09/17	11:32
QC1203783196	422310001	PS									
Nitrogen, Nitrate/Nitrite	1.00	0.431		1.36	mg/L			92.9 (90%-110%)		05/09/17	12:08
Batch	1662570										
QC1203783390	422310001	DUP									
Phosphorus, Total as P		U	ND	U	ND	mg/L	N/A		KLP1	05/18/17	10:12
QC1203783388	LCS										
Phosphorus, Total as P	1.00			1.07	mg/L			107 (80%-124%)		05/18/17	09:59
QC1203783387	MB										
Phosphorus, Total as P			U	ND	mg/L					05/18/17	09:58

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QC Summary

Workorder: 422436

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1662570										
QC1203783392	422310001	MS									
Phosphorus, Total as P	1.00	U	ND		1.18	mg/L	116	(63%-139%)	KLP1	05/18/17	10:13
Batch	1662576										
QC1203783405	422310002	DUP									
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	05/09/17	11:16
QC1203783402	LCS										
Nitrogen, Total Kjeldahl	1.00				1.09	mg/L	109	(90%-110%)		05/09/17	11:14
QC1203783401	MB										
Nitrogen, Total Kjeldahl			J		0.0517	mg/L				05/09/17	11:13
QC1203783406	422310002	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND		1.10	mg/L	110	(90%-110%)		05/09/17	11:17
Solids Analysis											
Batch	1663153										
QC1203784953	422436001	DUP									
Total Dissolved Solids			130		134	mg/L	3.24	(0%-5%)	KLP1	05/10/17	15:01
QC1203784950	LCS										
Total Dissolved Solids	300				287	mg/L	95.7	(95%-105%)		05/10/17	15:01
QC1203784949	MB										
Total Dissolved Solids			U		ND	mg/L				05/10/17	15:01
Titration and Ion Analysis											
Batch	1663499										
QC1203785788	422436001	DUP									
Conductivity			254		255	umhos/cm	0.393	(0%-10%)	VH1	05/12/17	13:41
QC1203785786	LCS										
Conductivity	1410				1400	umhos/cm	98.9	(95%-105%)		05/12/17	13:36

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QC Summary

Workorder: 422436

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch	1665848										
QC1203791292	422436001	DUP									
Alkalinity, Total as CaCO3		60.0		60.6	mg/L	0.995		(0%-20%)	RXB5	05/17/17	19:54
Carbonate alkalinity (CaCO3)	U	ND	U	ND	mg/L	N/A					
QC1203791289	LCS										
Alkalinity, Total as CaCO3	100			108	mg/L		108	(90%-110%)		05/17/17	19:38
QC1203791295	422436001	MS									
Alkalinity, Total as CaCO3	100	60.0		164	mg/L		104	(80%-120%)		05/17/17	19:55
Batch	1665849										
QC1203791299	422436001	DUP									
pH	H	8.26	H	8.28	SU	0.242		(0%-5%)	RXB5	05/17/17	19:53
QC1203791298	LCS										
pH	7.00			6.98	SU		99.7	(99%-101%)		05/17/17	19:38

Notes:

- < Result is less than value reported
- > Result is greater than value reported
- B The target analyte was detected in the associated blank.
- E General Chemistry--Concentration of the target analyte exceeds the instrument calibration range
- H Analytical holding time was exceeded
- J Value is estimated
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Per section 9.3.4.1 of Method 1664 Revision B, due to matrix spike recovery issues, this result may not be reported or used for regulatory compliance purposes.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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QC Summary

Workorder: 422436

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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. 18-MAY-17	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1665849	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 422436(2017-1476),422570(2017-1486),422637(2017-1489),422638(2017-1490) Application Issues: Sample received out of holding			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Sample received out of holding: 422436 001,005,008 422570 003,006 422637 001 422638 001 QC 1203791299DUP		1. Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified. 1203791299 (CAMO-17-132216DUP) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436001 (CAMO-17-132216) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436005 (CAMO-17-132325) [Received 05-MAY-17, out of holding 03-MAY-17]. 422436008 (CAMO-17-132338) [Received 05-MAY-17, out of holding 03-MAY-17]. 422570003 (CAMO-17-132213) [Received 06-MAY-17, out of holding 04-MAY-17]. 422570006 (CASA-17-132327) [Received 06-MAY-17, out of holding 04-MAY-17]. 422637001 (CASA-17-132322) [Received 09-MAY-17, out of holding 05-MAY-17]. 422638001 (CASA-17-132319) [Received 09-MAY-17, out of holding 05-MAY-17].	

Originator's Name:

Rachael Bell 18-MAY-17

Data Validator/Group Leader:

Elzbieta Szulc 25-MAY-17