

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

Chain of Custody/Analysis Request

COC/Lab Request #:
12-1254

Page 1 of 1

Client Contact:

Lab Agreement # : 126310011

Site Name: Lbs Alamos National Laboratory

Project Number :

Analysis Turnaround Time:

24 Hour - ☐ Other - ☐

7 Day - ☐

14 Day - ☐

21 Day - ☐

28 Day - ☒

Rad Screening Info:

Yes, Below Background

Field Sample ID

Sample Date

Sample
Time

Sample
Matrix

WSP-8321A-NMED HEXP

WSP-GENINORG

WSP-GrossA/B

WSP-HEXMOD

WSP-Met+B+SN+SR+U

WSP-NH3+NO3/NO2+PO4

WSP-RAD

WSP-TKN+TOC

Special Instructions:

CAPA-12-13278

Apr 30 2012

09:37

W

3

1

2

1

1

CAPA-12-13288

Apr 30 2012

09:37

W

1

1

1

1

Special Instructions:

Relinquished by:

Relinquished by:

Relinquished by:

Date/Time:

Date/Time:

Date/Time:

Received by:

Received by:

Received by:

4/30/12 3:00

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3855 EVENT NAME: Pajarito (General Surveillance)
 Q3 Watershed Sampling
 SAMPLE ID: CAPA-12-13278 WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		4/30/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		0937	MEDIA:	WGA	I
PRS ID:		OK	SAMPLE TECH CODE:	UA	BP
LOCATION ID: 18-MW-18		I	FIELD PREP:	UF	OK
LOCATION TYPE: MON			FIELD QC TYPE:	REG	I
PORT: SINGLE COMPLETION			SAMPLE USAGE:	INV	

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-8321A-NMED HEXP	1 LITER AMBER GLASS	3	4/30/12 ICE	I	N/A
I	WSP-GrossA/B	1 LITER POLY	1	NONE	I	I
I	WSP-HEXMOD	1 LITER AMBER GLASS	2	ICE	I	I
I	WSP-RAD	1 GAL POLY	1	HNO3	I	I
I	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	I	I

SAMPLE COMMENTS: Sampling conducted ~50' away from pajarito rad

LOCATION COMMENTS: N/A

FIELD PARAMETERS:

Dissolved Oxygen 7.27 mg/L Oxidation-Reduction Potential 125.2 MV pH 6.76 SU
 Specific Conductance 1467 uS/cm Temperature 11.93 deg C Turbidity 1.86 NTU

COLLECTED BY (PRINT) QFellenz

RELINQUISHED BY (Printed Name) <u>William Shaw</u> (Signature) <u>[Signature]</u>	Date/Time <u>4/30/12</u> <u>1135</u>	RECEIVED BY (Printed Name) <u>A. Martin</u> (Signature) <u>[Signature]</u>	Date/Time <u>4/30/12</u> <u>1135</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 04/11/2012

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 3855 EVENT NAME: Pajarito (General Surveillance)
 Q3 Watershed Sampling
 SAMPLE ID: CAPA-12-13288 WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		4/30/2012	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		0937	MEDIA:	WGA	I
PRS ID:		OK	SAMPLE TECH CODE:	UA	BP
LOCATION ID: 18-MW-18		I	FIELD PREP:	F	OK
LOCATION TYPE: MON		I	FIELD QC TYPE:	REG	I
PORT: SINGLE COMPLETION		I	SAMPLE USAGE:	INV	I

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
N/A	WSP-GENINORG	1 LITER POLY	1	ICE	I	N/A
I	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	I	I
I	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	I	I

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Dissolved Oxygen _____ mg/L
 Specific Conductance _____ uS/cm
 Oxidation-Reduction Potential _____ mV
 Temperature _____ deg C
 pH _____ SU
 Turbidity _____ NTU

COLLECTED BY (PRINT) D. Fellenz

RELINQUISHED BY (Printed Name) William Shaw (Signature) [Signature]	Date/Time 4/30/12 1135	RECEIVED BY (Printed Name) [Signature] (Signature) [Signature]	Date/Time 4/30/12 1135
RELINQUISHED BY (Printed Name) _____ (Signature) _____	Date/Time _____	RECEIVED BY (Printed Name) _____ (Signature) _____	Date/Time _____

Report Date 04/11/2012

Data Validation Report

Chain Of Custody No. 12-1254

1. Distribution Of Samples In EDD.

	Analytical	Regular	Field	Trip	Field	Equipment
SDG	Method	Samples	Duplicates	Blanks	Blanks	Blanks
303489	EPA:120.1	1				
303489	EPA:150.1	1				
303489	EPA:160.1	1				
303489	EPA:245.2	1				
303489	EPA:300.0	1				
303489	EPA:310.1	1				
303489	EPA:350.1	1				
303489	EPA:351.2	1				
303489	EPA:353.2	1				
303489	EPA:365.4	1				
303489	EPA:900	1				
303489	EPA:901.1	1				
303489	EPA:905.0	1				
303489	HASL-300:AM-241	1				
303489	HASL-300:ISOPU	1				
303489	HASL-300:ISOU	1				
303489	SM:A2340B	1				
303489	SW-846:6010B	1				
303489	SW-846:6020	1				
303489	SW-846:6850	1				
303489	SW-846:8321A_MOD	1				
303489	SW-846:9060	1				

	Analytical	Analysis	Prep	Regular	Field	Trip	Field	Equipment	Method	Matrix	Matrix
SDG	Method	Lot ID	Lot ID	Samples	Duplicates	Blanks	Blanks	Blanks	Blanks	Spikes	Spike Dups
303489	EPA:120.1	1210920	1210920	1							
303489	EPA:150.1	1208900	1208900	1							
303489	EPA:160.1	1209153	1209153	1						1	
303489	EPA:245.2	1208500	1208499	1						1	1
303489	EPA:300.0	1207431	1207431	1						1	
303489	EPA:310.1	1210449	1210449	1						1	1
303489	EPA:350.1	1209014	1209011	1						1	1
303489	EPA:351.2	1207684	1207679	1						1	1
303489	EPA:353.2	1208644	1208644	1						1	
303489	EPA:365.4	1207687	1207685	1						1	1
303489	EPA:900	1212200	1212200	1						1	1
303489	EPA:901.1	1208334	1208334	1						1	
303489	EPA:905.0	1210551	1210551	1						1	1
303489	HASL-300:AM-241	1207310	1207310	1						1	
303489	HASL-300:ISOPU	1207311	1207311	1						1	
303489	HASL-300:ISOU	1207313	1207313	1						1	
303489	SM:A2340B	1214284	1214284	1							
303489	SW-846:6010B	1208720	1208719	1						1	1
303489	SW-846:6020	1208718	1208717	1						1	1
303489	SW-846:6850	1208033	1208032	1						1	1
303489	SW-846:8321A_MOD	1208649	1208646	1						1	1
303489	SW-846:9060	1210398	1210398	1						1	

Analytical	Post-Digestion	Lab Control	Lab Control	Blank	Blank	Lab	Storage	Preparation	Reagent
Spikes	Spikes	Samples	Sample Dups	Spikes	Spike Dups	Duplicates	Blanks	Blanks	Blanks
		1				1			
						1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				1			
		1				2			

2. Distribution Of Analytes In EDD.

Analytical Method	Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spikes	TICS
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPA-12-13290	1202653384	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202653382	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13288	1202648411	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPA-12-13345	1202648998	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202648999	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202648997	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13287	1202647539	DUP	1	0	0	0
EPA:245.2	INORGANIC	CAPA-12-13287	1202647540	MS	0	0	1	0
EPA:245.2	INORGANIC	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1202647538	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202647537	MB	1	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13287	1202644915	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202644917	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202644914	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13345	1202652186	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPA-12-13345	1202652190	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202652192	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202652183	MB	3	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13345	1202648648	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13345	1202648650	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPA-12-13345	1202648652	MSD	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202648653	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202648646	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13278	303489001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645554	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645555	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPA-12-13281	1202645556	MSD	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202645557	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202645553	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPA-12-13345	1202647831	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202647835	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202647828	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645563	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645564	MS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13287	1202645565	MSD	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	CAPA-12-13288	303489002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202645566	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202645562	MB	1	0	0	0
EPA:900	RAD	CAPA-12-13278	303489001	REG	2	0	0	0
EPA:900	RAD	CAPA-12-13285	1202656704	DUP	2	0	0	0
EPA:900	RAD	CAPA-12-13285	1202656705	MS	0	0	2	0
EPA:900	RAD	CAPA-12-13285	1202656706	MSD	0	0	2	0
EPA:900	RAD	LCS	1202656707	LCS	0	0	2	0
EPA:900	RAD	MB	1202656703	MB	2	0	0	0
EPA:901.1	RAD	CAPA-12-13278	303489001	REG	5	0	0	0
EPA:901.1	RAD	CAPA-12-13281	1202647097	DUP	5	0	0	0

EPA:901.1	RAD	LCS	1202647098	LCS	0	0	3	0
EPA:901.1	RAD	MB	1202647096	MB	5	0	0	0
EPA:905.0	RAD	CAPA-12-13278	1202652529	DUP	1	0	0	0
EPA:905.0	RAD	CAPA-12-13278	1202652530	MS	0	0	1	0
EPA:905.0	RAD	CAPA-12-13278	303489001	REG	1	0	0	0
EPA:905.0	RAD	LCS	1202652531	LCS	0	0	1	0
EPA:905.0	RAD	MB	1202652528	MB	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13277	1202644609	DUP	1	0	0	0
HASL-300:AM-241	RAD	CAPA-12-13278	303489001	REG	1	0	0	0
HASL-300:AM-241	RAD	LCS	1202644610	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1202644608	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13277	1202644612	DUP	2	0	0	0
HASL-300:ISOPU	RAD	CAPA-12-13278	303489001	REG	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1202644613	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1202644611	MB	2	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13277	1202644615	DUP	3	0	0	0
HASL-300:ISOU	RAD	CAPA-12-13278	303489001	REG	3	0	0	0
HASL-300:ISOU	RAD	LCS	1202644616	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1202644614	MB	3	0	0	0
SM:A2340B	INORGANIC	CAPA-12-13288	303489002	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13288	303489002	REG	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13290	1202648017	DUP	17	0	0	0
SW-846:6010B	INORGANIC	CAPA-12-13290	1202648018	MS	0	0	17	0
SW-846:6010B	INORGANIC	LCS	1202648016	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202648015	MB	17	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13288	303489002	REG	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13290	1202648012	DUP	11	0	0	0
SW-846:6020	INORGANIC	CAPA-12-13290	1202648013	MS	0	0	11	0
SW-846:6020	INORGANIC	LCS	1202648011	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202648010	MB	11	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13287	1202646393	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13287	1202646394	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPA-12-13288	303489002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202646392	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202646391	MB	1	0	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13278	303489001	REG	23	2	0	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13345	1202647846	MS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	CAPA-12-13345	1202647847	MSD	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	LCS	1202647845	LCS	0	2	23	0
SW-846:8321A_MOD	LCMS/MS HIGH EXPLOSIVES	MB	1202647844	MB	23	2	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13277	1202652080	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13278	303489001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPA-12-13286	1202655722	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1202652082	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1202652079	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

Any samples affected by the presence of contaminants in blanks?

Field	Blank Field	Blank Lab	Blank	Analytical	Parameter		Blank	Sample	Lab	Detect	
Sample ID	Sample ID	Sample ID	Type	Method	Name	Units	Result	Result	Qualifier	Limit	Detected
CAPA-12-13288	MB	1202647537	METHOD BLANK	EPA:245.2	Mercury	ug/L	-0.094	0.2	U	0.2	N

6. Any surrogate recoveries outside the control limits?

No.

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

Field	Matrix	Matrix	Analytical	Parameter	Analysis	Analysis	Sample	MS %	MSD %	Upper	Lower
Sample ID	Spike ID	Spike Dup ID	Method	Name	Lot ID	Date	Matrix	Recvry	Recvry	Limit	Limit
CAPA-12-13281	1202645555	1202645556	EPA:351.2	Total Kjeldahl Nitrogen	1207679	5/8/2012	W	87.5	88.2	110	90
CAPA-12-13285	1202656705	1202656706	EPA:900	Gross alpha	1212200	5/25/2012	W	91.8	103	125	75

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

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

None.

13. Display Flagged Data.

Location ID	Chain Of Custody No	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detected
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N

Correction	Correction	Use
Factor (ND)	Factor (J)	Factors
5		Y

Rejection	RPD	RPD
Limit		
10	0.797	20
10	11.7	6.13

Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent Moisture	Analysis Lot ID	Validation Status Code	Use Flag
0.0156	pCi/L	0.0156	pCi/L	0.0746	0.0136	W	4/30/2012		1207310	VAL	Y
1.23	pCi/L	1.23	pCi/L	5.12	1.3	W	4/30/2012		1208334	VAL	Y
3.3	pCi/L	3.3	pCi/L	6.84	1.56	W	4/30/2012		1208334	VAL	Y

18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
18-MW-18	12-1254	CAPA-12-13278	REG	INIT	RAD	HASL-300:ISOU	Uranium-235/236	U	U	R5	N

Reason Code

Description

J_LAB

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

NQ

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

R5

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

U_LAB

The analytical laboratory qualified the analyte as not detected.

14. Useable Result Count.

Field	Location	Sample	Analytical	No. Unuseable	Total No. Of
Sample ID	ID	Purpose	Method	Records	Records
CAPA-12-13278	18-MW-18	REG	EPA:351.2	0	1
CAPA-12-13278	18-MW-18	REG	EPA:900	0	2
CAPA-12-13278	18-MW-18	REG	EPA:901.1	0	5
CAPA-12-13278	18-MW-18	REG	EPA:905.0	0	1
CAPA-12-13278	18-MW-18	REG	HASL-300:AM-241	0	1
CAPA-12-13278	18-MW-18	REG	HASL-300:ISOPU	0	2
CAPA-12-13278	18-MW-18	REG	HASL-300:ISOU	0	3
CAPA-12-13278	18-MW-18	REG	SW-846:8321A_MOD	0	23
CAPA-12-13278	18-MW-18	REG	SW-846:9060	0	1
CAPA-12-13288	18-MW-18	REG	EPA:120.1	0	1
CAPA-12-13288	18-MW-18	REG	EPA:150.1	0	1
CAPA-12-13288	18-MW-18	REG	EPA:160.1	0	1
CAPA-12-13288	18-MW-18	REG	EPA:245.2	0	1
CAPA-12-13288	18-MW-18	REG	EPA:300.0	0	4
CAPA-12-13288	18-MW-18	REG	EPA:310.1	0	2
CAPA-12-13288	18-MW-18	REG	EPA:350.1	0	1
CAPA-12-13288	18-MW-18	REG	EPA:353.2	0	1
CAPA-12-13288	18-MW-18	REG	EPA:365.4	0	1
CAPA-12-13288	18-MW-18	REG	SM:A2340B	0	1
CAPA-12-13288	18-MW-18	REG	SW-846:6010B	0	17
CAPA-12-13288	18-MW-18	REG	SW-846:6020	0	11
CAPA-12-13288	18-MW-18	REG	SW-846:6850	0	1

0.0645	pCi/L	0.0645	pCi/L	2.95	0.64	W	4/30/2012		1212200	VAL	Y
2.17	pCi/L	2.17	pCi/L	10.4	2.91	W	4/30/2012		1208334	VAL	Y
-0.00278	pCi/L	-0.00278	pCi/L	0.0431	0.00393	W	4/30/2012		1207311	VAL	Y
-0.00278	pCi/L	-0.00278	pCi/L	0.0366	0.00621	W	4/30/2012		1207311	VAL	Y
0.0763	pCi/L	0.0763	pCi/L	74.6	20.4	W	4/30/2012		1208334	VAL	Y
0.245	pCi/L	0.245	pCi/L	5.37	1.37	W	4/30/2012		1208334	VAL	Y
-0.158	pCi/L	-0.158	pCi/L	0.48	0.13	W	4/30/2012		1210551	VAL	Y
0.0103	pCi/L	0.0103	pCi/L	0.0399	0.00906	W	4/30/2012		1207313	VAL	Y



May 23, 2012

www.gel.com

Keith Greene
Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Re: LANL-WQH Water Samples
Work Order: 303489
SDG: 12-1254

Dear Keith Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on May 01, 2012, and analyzed for Explosives by LCMSMS, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Hope Taylor for
Valerie Davis
Project Manager

Purchase Order: 63641-10
Chain of Custody: 12-1254
Enclosures



ARS International (63641-10)
LANL-WQH Water Samples
Work Order #: 303489
SDG: 12-1254

Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	4
Data Review Qualifier Flag Definition Sheet.....	9
Perchlorates by LCMSMS Analysis.....	11
Case Narrative.....	12
Sample Data Summary.....	18
Quality Control Summary.....	20
Quality Control Data.....	23
Explosives by LCMSMS Analysis.....	29
Case Narrative.....	30
Sample Data Summary.....	37
Quality Control Summary.....	41
Quality Control Data.....	47
Metals Analysis.....	78
Case Narrative.....	79
Sample Data Summary.....	85
Quality Control Summary.....	89
General Chem Analysis.....	103
Case Narrative.....	104
Sample Data Summary.....	132

Quality Control Summary.....	137
Miscellaneous.....	142
Radiological Analysis.....	147
Sample Data Summary.....	160
Quality Control Data.....	163

Case Narrative

**Case Narrative for
ARS International (63641-10)
LANL-WQH Water Samples
Workorder #: 303489
SDG # : 12-1254**

May 23, 2012

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 01, 2012 for analysis. Please see attached email for discrepancies. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. The containers for Gross A/B were preserved prior to analysis. 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>
303489001	CAPA-12-13278
303489002	CAPA-12-13288

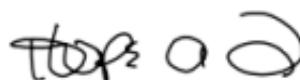
Case Narrative

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

Data Package

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS, General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry.

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



Hope Taylor for
Valerie Davis
Project Manager

List of current GEL Certifications as of 23 May 2012

State	Certification
Arizona	AZ0766
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP A2LA ISO 17025	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-09-00191
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA120008
Maryland	270
Massachusetts	M-SC012
Mississippi	SC00012
Nevada	SC000122011-1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68-00485
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-12-7
Utah NELAP	SC00012
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
Wisconsin	999887790

Chain of Custody and Supporting Documentation

303489

COC/Lab Request #:
12-1254

Page 1 of 1

[illegible]



SAMPLE RECEIPT & REVIEW FORM

Client: LANL			SDG/AR/COC/Work Order: 12-1254		
Received By: SHANTA WHITLOCK			Date Received: May 1, 2012		
Suspected Hazard Information		Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
COC/Samples marked as radioactive?			X	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0	
Classified Radioactive II or III by RSO?			X	If yes, Were swipes taken of sample containers < action levels?	
COC/Samples marked containing PCBs?			X		
Package, COC, and/or Samples marked as beryllium or asbestos containing?			X	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.	
Shipped as a DOT Hazardous?			X	Hazard Class Shipped: UN#:	
Samples identified as Foreign Soil?			X		

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) 5C *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: 51050004 Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	X			
4 Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?			X	Sample ID's, containers affected and observed pH: CAPA-12-13278 If Preservation added, Lot#: K45047
6 VOA vials free of headspace (defined as < 6mm bubble)?		X		Sample ID's and containers affected:
7 Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8 Samples received within holding time?	X			ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10 Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11 Number of containers received match number indicated on COC?	X			Sample ID's affected: CAPA-12-13278 lab received 2 containers for HEXP, COC indicates 3.
12 Are sample containers identifiable as GEL provided?			X	
13 COC form is properly signed in relinquished/received sections?	X			
14 Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7209 7856 6000

Comments (Use Continuation Form if needed):

Subject: Today's Issues

From: Shanta Whitlock <sha01289@gel.com>

Date: Tue, 01 May 2012 16:02:44 -0400

To: Keith Green <kgreene@lanl.gov>, Team Davis <Team.Davis@gel.com>

Good afternoon Keith, RN# 12-1254 sample CAPA-12-13278 for WSP-Gross A/B was preserved at lab. RN# 12-1252 only 1 vial was received for samples CAPA-12-13423, CAPA-12-13424 and CAPA-12-13278.

Thanks.

Shanta Whitlock <shanta.whitlock@gel.com>

Project Manager Assistant

Customer Service

The Gel Group

ORIGIN ID: SAFA (505) 665-9988
JOYLENE VALDEZ
LOS ALAMOS NATL LAB.
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 30APR12
ACTWGT: 49.0 LB MAN
CAD: 0014176/CAFE2511

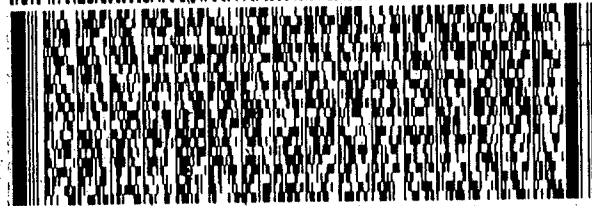
BILL SENDER

° VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: MR1A015AGWFO



FedEx
Express



J111118660125

TRK#
0201

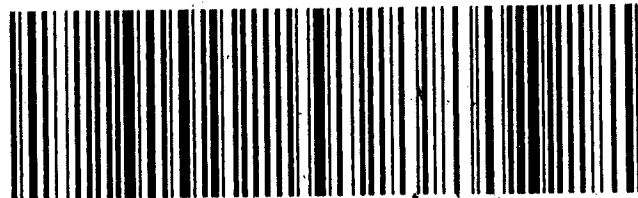
7209 7856 6000

TUE - 01 MAY A1
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part # 156148-434 NRIT V3 09-08



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.

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC/MSMS
ARS International (ARSL)
SDG 12-1254**

Method/Analysis Information

Procedure: **Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)**

Analytical Method: SW846 6850 Modified

Prep Method: SW846 6850 Modified

Analytical Batch Number: 1208033

Prep Batch Number: 1208032

Sample Analysis

Sample ID	Client ID
303489002	CAPA-12-13288
1202646395	Interference Check Sample (ICS)
1202646391	Method Blank (MB)
1202646392	Laboratory Control Sample (LCS)
1202646393	303221003(CAPA-12-13287) Matrix Spike (MS)
1202646394	303221003(CAPA-12-13287) 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# 9.

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.

CCV Requirements

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

Interference Check Sample (ICS)

The interference check sample (ICS) met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 303221003 (CAPA-12-13287) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Retention Time Standard Area Acceptance

The retention time standard areas were within the required acceptance criteria for all samples and QC.

Retention Time

During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard. The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by Method 332.0, has been used. In addition to the isotopic ratio, the presence of Perchlorate in the samples associated with this data package have been confirmed using the relative retention criteria stated above, not the absolute retention time.

Technical Information**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

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

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

Manual Integrations

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

Method Comments

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

Additional Comments

The Perchlorate Isotope Ratio on the Form I may differ slightly from the ratio on the corresponding raw data due to rounding rules and/or significant figures or due to software limitations when there are manual integrations, dilutions or other factors. The ratio value of the Form I is the correct value. The retention time marker, Perchlorate-O (18), is added to all samples, instrument blanks, and standards prior to injection. It is used to verify the retention time of Perchlorate and Perchlorate-101 and to insure an accurate injection occurred. Due to various anions affecting the recovery of Perchlorate-O (18) and not Perchlorate and Perchlorate-101, the calibration curves of Perchlorate and Perchlorate-101 are not internally corrected for using Perchlorate-O (18). They are external calibrations.

Perchlorate Isotope Ratio

The Perchlorate isotope ratio met acceptance criteria for all samples and QC samples. Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for perchlorate analysis. It is coupled with either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. It is fitted with an electrospray probe that is operated in the negative electrospray ionization mode for perchlorate analysis. The laboratory may also utilize an Agilent 1100 liquid chromatography instrument for perchlorate analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as LCMSMS #3 or LCMSMS #4. It is also fitted with an electrospray probe that is operated in the negative electrospray ionization mode for perchlorate analysis.

Electronic Packaging Comment

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

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and

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

Chromatographic Columns

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1254 GEL Work Order: 303489

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Patricia Steele

Date: 23 MAY 2012

Title: Data Validator

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-12-13288Date Received: 01-MAY-12GEL Job No (SDG): 12-1254GEL Sample ID: 303489002Date Filtered: 14-MAY-12Injection 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	0.171	ug/L	J	1	14-MAY-12 19:35	per0514026a
	Perchlorate Isotope Ratio			2.94			1	14-MAY-12 19:35	per0514026a
14797-73-0	Perchlorate-101	.05	.2	0.183	ug/L	J	1	14-MAY-12 19:35	per0514026a
	Perchlorate-O(18)			0.552	ug/L		1	14-MAY-12 19:35	per0514026a

^ 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): 12-1254

Extract Batch Code: 1208032

Date Filtered: 14-MAY-12

Matrix: WATER

Sample ID: 1202646392

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.186	ug/L	93.2		85 - 115
Perchlorate Isotope Ratio		3.08				-
Perchlorate-101	0.200	.191	ug/L	95.4		85 - 115
Perchlorate-O(18)		.48	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): 12-1254

Extract Batch Code: 1208032

Date Extracted: 14-MAY-12

GEL MS/PS ID: 1202646393

Client ID: CAPA-12-13287

GEL MSD/PSD ID: 1202646394

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	0.265	ug/L	0.482	108	.511	123	5.74	30	75 - 125
Perchlorate Isotope Ratio	0	3.16		3.12		3.19		2.23		-
Perchlorate-101	0.200	0.265	ug/L	0.487	111	.504	120	3.51	30	75 - 125
Perchlorate-O(18)	0	0.581	ug/L	0.579		.6		3.68		-

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 14-MAY-12GEL Job No (SDG): 12-1254GEL Sample ID: 1202646391Date Filtered: 14-MAY-12Injection 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	0.050	ug/L	U	1	14-MAY-12 18:04	per0514014a
	Perchlorate Isotope Ratio						1	14-MAY-12 18:04	per0514014a
14797-73-0	Perchlorate-101	.05	.2	0.050	ug/L	U	1	14-MAY-12 18:04	per0514014a
	Perchlorate-O(18)			0.517	ug/L		1	14-MAY-12 18:04	per0514014a

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 14-MAY-12GEL Job No (SDG): 12-1254GEL Sample ID: 1202646392Date Filtered: 14-MAY-12Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.186	ug/L	J	1	14-MAY-12 18:12	per0514015a
	Perchlorate Isotope Ratio			3.08			1	14-MAY-12 18:12	per0514015a
14797-73-0	Perchlorate-101	.05	.2	0.191	ug/L	J	1	14-MAY-12 18:12	per0514015a
	Perchlorate-O(18)			0.480	ug/L		1	14-MAY-12 18:12	per0514015a

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 12-1254GEL Sample ID: 1202646395Date Filtered: 14-MAY-12Injection 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	0.226	ug/L		1	14-MAY-12 18:19	per0514016a
	Perchlorate Isotope Ratio			3.24			1	14-MAY-12 18:19	per0514016a
14797-73-0	Perchlorate-101	.05	.2	0.221	ug/L		1	14-MAY-12 18:19	per0514016a
	Perchlorate-O(18)			0.558	ug/L		1	14-MAY-12 18:19	per0514016a

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-12-13287MSDate Received: 25-APR-12GEL Job No (SDG): 12-1254GEL Sample ID: 1202646393Date Filtered: 14-MAY-12Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.482	ug/L		1	14-MAY-12 18:34	per0514018a
	Perchlorate Isotope Ratio			3.12			1	14-MAY-12 18:34	per0514018a
14797-73-0	Perchlorate-101	.05	.2	0.487	ug/L		1	14-MAY-12 18:34	per0514018a
	Perchlorate-O(18)			0.579	ug/L		1	14-MAY-12 18:34	per0514018a

^ 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: 1208032Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPA-12-13287MSDDate Received: 25-APR-12GEL Job No (SDG): 12-1254GEL Sample ID: 1202646394Date Filtered: 14-MAY-12Injection 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	0.511	ug/L		1	14-MAY-12 18:42	per0514019a
	Perchlorate Isotope Ratio			3.19			1	14-MAY-12 18:42	per0514019a
14797-73-0	Perchlorate-101	.05	.2	0.504	ug/L		1	14-MAY-12 18:42	per0514019a
	Perchlorate-O(18)			0.600	ug/L		1	14-MAY-12 18:42	per0514019a

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

*Concentration =

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

Explosives by LCMSMS Analysis

Case Narrative

**LC/MS/MS Case Narrative
ARS International (ARSL)
SDG 12-1254**

Method/Analysis Information

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

Analytical Method: SW846 3535/8321A Modified

Prep Method: SW846 Method 3535

Analytical Batch Number: 1208649

Prep Batch Number: 1208646

Sample Analysis

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

Sample ID	Client ID
303489001	CAPA-12-13278
1202647844	Method Blank (MB)
1202647845	Laboratory Control Sample (LCS)
1202647846	303443003(CAPA-12-13345) Matrix Spike (MS)
1202647847	303443003(CAPA-12-13345) Matrix Spike Duplicate (MSD)

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-056 REV# 16.

Primary Analyte Analysis

Calibration Information

Initial Calibration

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

Calibration Verification Standard Requirements

The closing CCV, EXP0521075.wiff, did not meet acceptance criteria of 80-120% for 3-Nitrotoluene at 76.6%. The data are Q qualified according to the SOP and are reported.

Calibration Blank Requirements

All initial or continuing calibration blanks (ICB or CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

CRI Requirements

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

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

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

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 303443003 (CAPA-12-13345) from SDG 12-1249 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS spike recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD spike recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance

A final internal standard concentration of 100ug/L is employed in order to meet the minimum response factor requirement of 0.01 per EPA Method 8000C for the analysis of explosives on the API 4000. The internal standard responses were within the required acceptance criteria for all samples and QC in this SDG.

Technical Information**Holding Time Specifications**

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

According to the GEL SOP for Method 8321A, all sample and QC extracts are diluted 1:1 v/v with HPLC grade water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

Sample Re-extraction/Re-analysis

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

Secondary Analyte Analysis

Calibration Information

Initial Calibration

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

Calibration Verification Standard Requirements

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

Calibration Blank Requirements

All initial or continuing calibration blanks (ICB or CCB) bracketing the analyses associated with this batch for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

CRI Requirements

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

Quality Control (QC) Information

Method Blank (MB) Statement

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

Surrogate Recoveries

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

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries were within the established acceptance limits.

QC Sample Designation

Client sample 303443003 (CAPA-12-13345) from SDG 12-1249 was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS spike recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD spike recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits for this analysis.

Internal Standard (ISTD) Acceptance

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

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

According to the GEL SOP for Method 8321A, all sample and QC extracts are diluted 1:1 v/v with HPLC grade water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this analytical batch for this Secondary analyte 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

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

Flagging Convention

The samples were not originally analyzed using SW-846 Method 8330.

Additional Comments

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

Due to software limitations in the Secondary analyte analysis, false positives and analytes detected below the MDL cannot be deleted from the raw data.

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

System Configuration

The laboratory utilizes a Waters LC 2795 liquid chromatography instrument for Primary analyte analysis. It is coupled with either a Micromass Quattro Micro Mass Spectrometer/ Mass Spectrometer, or a Micromass Quattro Ultima Mass Spectrometer/ Mass Spectrometer. Each being designated as LCMSMS #1 and LCMSMS #2, respectively. It is fitted with an APCI (Atmospheric Pressure chemical Ionization) probe that is operated in the negative ionization mode for the Primary analyte analysis. The laboratory also utilizes an Agilent 1100 liquid chromatography instrument for either Primary or Secondary analyte analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as either LCMSMS #3 or LCMSMS #4. It is fitted with an APCI (Atmospheric Pressure chemical Ionization) probe that is operated in the negative ionization mode for both the Primary and Secondary analyte analysis.

Electronic Packaging Comment

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

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

Chromatographic Columns

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

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

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

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

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1254 GEL Work Order: 303489

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 24 MAY 2012

Title: Group Leader

Sample Data Summary

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13278

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 303489001

Sample Amount 860 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0521074.wiff

Date Analyzed: 23-MAY-12 07:20

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.291	U	0.093	0.291
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.291	U	0.093	0.291
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.291	U	0.093	0.291
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.291	U	0.093	0.291
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.291	U	0.093	0.291
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.291	U	0.093	0.291
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.291	U	0.093	0.291
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.291	U	0.093	0.291
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.291	U	0.093	0.291
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.291	U	0.093	0.291
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.291	U	0.0953	0.291
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.291	U	0.093	0.291
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.291	QU	0.093	0.291
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13278

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 303489001

Sample Amount 860 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	0.291	U	0.093	0.291
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.291	U	0.093	0.291
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	0.581	U	0.093	0.581
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	0.581	U	0.116	0.581
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.581	U	0.174	0.581

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13278

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 303489001

Sample Amount 860 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05090028.wiff

Date Analyzed: 09-MAY-12 21:47

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	1.16	U	0.349	1.16
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.16	U	0.349	1.16
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.16	U	0.349	1.16
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.91	U	0.581	2.91
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.91	U	0.581	2.91
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

Quality Control Summary

High Explosives Surrogate Recovery Summary

Lab Name: GEL Laboratories LLCGEL Job No (SDG): 12-1254Lab Code: GELHPLC Column: Phenomenex Ultracarb 5u ODS(20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
303489001	CAPA-12-13278	92.8	68 - 122	
303489001	CAPA-12-13278	82	68 - 122	
1202647844	MB for batch 1208646	98.4	68 - 122	
1202647844	MB for batch 1208646	81.6	68 - 122	
1202647845	LCS for batch 1208646	96.4	68 - 122	
1202647845	LCS for batch 1208646	84.4	68 - 122	
1202647846	CAPA-12-13345(303443003MS)	90	68 - 122	
1202647846	CAPA-12-13345(303443003MS)	82.8	68 - 122	
1202647847	CAPA-12-13345(303443003MSD)	94	68 - 122	
1202647847	CAPA-12-13345(303443003MSD)	83.6	68 - 122	

DNT = 3,4-Dinitrotoluene

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 12-1254

Extract Batch Code: 1208646

Date Extracted: 02-MAY-12

GEL LCS ID: 1202647845

GEL LCSDUP ID: .

Analysis Date/Time: 23-MAY-12 05:00

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
2-Amino-4,6-dinitrotoluene	5	5.22	104					75 - 129
4-Amino-2,6-dinitrotoluene	5	5.01	100					78 - 125
DNX	5	4.71	94.2					73 - 117
HMX	5	4.58	91.6					65 - 112
MNX	5	4.87	97.4					68 - 129
Nitrobenzene	5	3.95	79					63 - 110
PETN	5	4.67	93.4					61 - 138
RDX	5	4.66	93.2					79 - 128
TNX	5	4.77	95.4					66 - 118
2,6-Dinitrotoluene	5	4.24	84.8					82 - 111
2,4-Dinitrotoluene	5	4.44	88.8					78 - 125
2,4,6-Trinitrotoluene	5	4.71	94.2					77 - 132
1,3,5-Trinitrobenzene	5	4.47	89.4					60 - 115
Tetryl	5	4.23	84.6					38 - 150
m-Dinitrobenzene	5	4.4	88					86 - 119
m-Nitrotoluene	5	4.17	83.4					63 - 109
o-Nitrotoluene	5	3.94	78.8					61 - 109
p-Nitrotoluene	5	3.75	75					64 - 112

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

* Values outside of QC limits

3B
High Explosives LCS/LCS Duplicate Summary

Lab Name: GEL Laboratories LLC

Client ID: LCS

Lab Code: GEL

GEL Job No (SDG) 12-1254

Extract Batch Code: 1208646

Date Extracted: 02-MAY-12

GEL LCS ID: 1202647845

GEL LCSDUP ID: .

Analysis Date/Time: 09-MAY-12 20:40

DUP Analysis Date/Time:

Reporting Units: ug/L

QC Type: LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
2,4-Diamino-6-nitrotoluene	5	3.76	75.2					49 - 112
2,6-Diamino-4-nitrotoluene	5	4.1	82					61 - 116
3,5-Dinitroaniline	5	4.26	85.2					66 - 119
TATB	5	2.88	57.6					32 - 169
tris(o-cresyl) phosphate	5	3.29	65.8					38 - 87

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

* Values outside of QC limits

3
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAPA-12-13345

Lab Code: GEL

GEL Job No (SDG) 12-1254

Extract Batch Code: 1208646

Date Extracted: 02-MAY-12

GEL Spike ID: 1202647846

GEL SpikeDup ID: 1202647847

Analysis Date/Time: 23-MAY-12 06:10

MSD Analysis Date/Time: 23-MAY-12 06:45

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
MNX	5.31915	0	5.16	97	5.44	101	5.31	25	74 - 127
Nitrobenzene	5.31915	0	4.02	75.6	3.84	71.4	4.65	25	61 - 118
PETN	5.31915	0	5.16	97	4.9	91.2	5.1	27	53 - 143
RDX	5.31915	0	5.06	95.2	4.91	91.4	3	25	63 - 145
TNX	5.31915	0	4.52	85	4.84	90	6.78	31	51 - 133
Tetryl	5.31915	0	4.55	85.6	4.45	82.8	2.26	28	31 - 119
m-Dinitrobenzene	5.31915	0	4.6	86.4	4.85	90.2	5.37	25	79 - 126
m-Nitrotoluene	5.31915	0	4.04	76	3.57	66.4	12.4	25	55 - 123
1,3,5-Trinitrobenzene	5.31915	0	4.54	85.4	4.73	88	4.07	25	58 - 114
HMX	5.31915	0	4.47	84	4.57	85	2.25	25	51 - 128
DNX	5.31915	0	4.84	91	5.23	97.2	7.66	34	67 - 126
4-Amino-2,6-dinitrotoluene	5.31915	0	5.16	97	5.34	99.4	3.51	25	65 - 137
2-Amino-4,6-dinitrotoluene	5.31915	0	5.57	105	5.47	102	1.84	25	66 - 137
2,6-Dinitrotoluene	5.31915	0	4.61	86.6	4.76	88.6	3.35	25	79 - 115
2,4-Dinitrotoluene	5.31915	0	4.82	90.6	4.6	85.6	4.61	25	73 - 128
2,4,6-Trinitrotoluene	5.31915	0	4.84	91	5.17	96.2	6.62	25	65 - 140
o-Nitrotoluene	5.31915	0	3.94	74	3.66	68	7.38	25	57 - 119
p-Nitrotoluene	5.31915	0	4.15	78	3.7	68.8	11.5	25	57 - 124

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

3
High Explosives MS/MSD Summary

Lab Name: GEL Laboratories LLC

Client ID: CAPA-12-13345

Lab Code: GEL

GEL Job No (SDG) 12-1254

Extract Batch Code: 1208646

Date Extracted: 02-MAY-12

GEL Spike ID: 1202647846

GEL SpikeDup ID: 1202647847

Analysis Date/Time: 09-MAY-12 21:13

MSD Analysis Date/Time: 09-MAY-12 21:30

Reporting Units: ug/L

QC Type: MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
2,4-Diamino-6-nitrotoluene	5.31915	0	4.16	78.2	4.33	80.6	4.09	25	42 - 117
2,6-Diamino-4-nitrotoluene	5.31915	0	4.67	87.8	4.4	81.8	6.01	25	50 - 121
3,5-Dinitroaniline	5.31915	0	4.72	88.8	4.56	84.8	3.54	25	59 - 125
TATB	5.31915	0	2.84	53.4	2.94	54.6	3.29	25	30 - 169
tris(o-cresyl) phosphate	5.31915	.0232	3.19	59.6	3.38	62.4	5.63	25	28 - 87

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

Quality Control Data

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647844

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0521069.wiff

Date Analyzed: 23-MAY-12 04:25

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	0.250	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	0.250	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	0.250	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	0.250	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	0.250	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	0.250	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	0.250	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	0.250	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	0.250	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	0.250	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	0.250	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	0.250	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	0.250	QU	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647844

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	0.250	U	0.080	0.250
99-65-0 <i>99-65-0</i>	m-Dinitrobenzene <i>m-Dinitrobenzene</i>	0.250	U	0.080	0.250
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	0.500	U	0.080	0.500
78-11-5 <i>78-11-5</i>	PETN <i>PETN</i>	0.500	U	0.100	0.500
99-99-0 <i>99-99-0</i>	p-Nitrotoluene <i>p-Nitrotoluene</i>	0.500	U	0.150	0.500

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647844

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05090023.wiff

Date Analyzed: 09-MAY-12 20:23

Dilution Factor: 2

Concentration Units: ug/L

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

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647845

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0521070.wiff

Date Analyzed: 23-MAY-12 05:00

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-99-0	p-Nitrotoluene	3.75		0.150	0.500
99-99-0	p-Nitrotoluene				
88-72-2	o-Nitrotoluene	3.94		0.082	0.250
88-72-2	o-Nitrotoluene				
98-95-3	Nitrobenzene	3.95		0.080	0.250
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	4.17	Q	0.080	0.250
99-08-1	m-Nitrotoluene				
479-45-8	Tetryl	4.23		0.080	0.500
479-45-8	Tetryl				
606-20-2	2,6-Dinitrotoluene	4.24		0.080	0.250
606-20-2	2,6-Dinitrotoluene				
99-65-0	m-Dinitrobenzene	4.4		0.080	0.250
99-65-0	m-Dinitrobenzene				
121-14-2	2,4-Dinitrotoluene	4.44		0.080	0.250
121-14-2	2,4-Dinitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	4.47		0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
2691-41-0	HMX	4.58		0.080	0.250
2691-41-0	HMX				
121-82-4	RDX	4.66		0.080	0.250
121-82-4	RDX				
78-11-5	PETN	4.67		0.100	0.500
78-11-5	PETN				
118-96-7	2,4,6-Trinitrotoluene	4.71		0.080	0.250
118-96-7	2,4,6-Trinitrotoluene				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647845

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
80251-29-2	DNX	4.71		0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
13980-04-6	TNX	4.77		0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	4.87		0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.01		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.22		0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1208646

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647845

Sample Amount 1000 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05090024.wiff

Date Analyzed: 09-MAY-12 20:40

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	2.88		0.300	1.00
3058-38-6	TATB				
78-30-8	tris(o-cresyl) phosphate	3.29		0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
6629-29-4	2,4-Diamino-6-nitrotoluene	3.76		0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.1		0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
618-87-1	3,5-Dinitroaniline	4.26		0.300	1.00
618-87-1	3,5-Dinitroaniline				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647846

Sample Amount 940 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0521072.wiff

Date Analyzed: 23-MAY-12 06:10

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
88-72-2	o-Nitrotoluene	3.94		0.0872	0.266
88-72-2	<i>o</i> -Nitrotoluene				
98-95-3	Nitrobenzene	4.02		0.0851	0.266
98-95-3	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	4.04	Q	0.0851	0.266
99-08-1	<i>m</i> -Nitrotoluene				
99-99-0	p-Nitrotoluene	4.15		0.160	0.532
99-99-0	<i>p</i> -Nitrotoluene				
2691-41-0	HMX	4.47		0.0851	0.266
2691-41-0	<i>HMX</i>				
13980-04-6	TNX	4.52		0.0851	0.266
13980-04-6	<i>TNX</i>				
99-35-4	1,3,5-Trinitrobenzene	4.54		0.0851	0.266
99-35-4	<i>1,3,5-Trinitrobenzene</i>				
479-45-8	Tetryl	4.55		0.0851	0.532
479-45-8	<i>Tetryl</i>				
99-65-0	m-Dinitrobenzene	4.6		0.0851	0.266
99-65-0	<i>m</i> -Dinitrobenzene				
606-20-2	2,6-Dinitrotoluene	4.61		0.0851	0.266
606-20-2	<i>2,6-Dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	4.82		0.0851	0.266
121-14-2	<i>2,4-Dinitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.84		0.0851	0.266
118-96-7	<i>2,4,6-Trinitrotoluene</i>				
80251-29-2	DNX	4.84		0.0851	0.266
80251-29-2	<i>DNX</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647846

Sample Amount 940 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-82-4	RDX	5.06		0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.16		0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
5755-27-1	MNX	5.16		0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
78-11-5	PETN	5.16		0.106	0.532
<i>78-11-5</i>	<i>PETN</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.57		0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MS)MS

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647846

Sample Amount 940 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05090026.wiff

Date Analyzed: 09-MAY-12 21:13

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	2.84		0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
78-30-8	tris(o-cresyl) phosphate	3.19		0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.16		0.532	2.66
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.67		0.532	2.66
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.72		0.319	1.06
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647847

Sample Amount 930 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXP0521073.wiff

Date Analyzed: 23-MAY-12 06:45

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-08-1	m-Nitrotoluene	3.57	Q	0.086	0.269
99-08-1	m-Nitrotoluene				
88-72-2	o-Nitrotoluene	3.66		0.0882	0.269
88-72-2	o-Nitrotoluene				
99-99-0	p-Nitrotoluene	3.7		0.161	0.538
99-99-0	p-Nitrotoluene				
98-95-3	Nitrobenzene	3.84		0.086	0.269
98-95-3	Nitrobenzene				
479-45-8	Tetryl	4.45		0.086	0.538
479-45-8	Tetryl				
2691-41-0	HMX	4.57		0.086	0.269
2691-41-0	HMX				
121-14-2	2,4-Dinitrotoluene	4.6		0.086	0.269
121-14-2	2,4-Dinitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	4.73		0.086	0.269
99-35-4	1,3,5-Trinitrobenzene				
606-20-2	2,6-Dinitrotoluene	4.76		0.086	0.269
606-20-2	2,6-Dinitrotoluene				
13980-04-6	TNX	4.84		0.086	0.269
13980-04-6	TNX				
99-65-0	m-Dinitrobenzene	4.85		0.086	0.269
99-65-0	m-Dinitrobenzene				
78-11-5	PETN	4.9		0.108	0.538
78-11-5	PETN				
121-82-4	RDX	4.91		0.086	0.269
121-82-4	RDX				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647847

Sample Amount 930 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	5.17		0.086	0.269
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
80251-29-2	DNX	5.23		0.086	0.269
<i>80251-29-2</i>	<i>DNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.34		0.086	0.269
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
5755-27-1	MNX	5.44		0.086	0.269
<i>5755-27-1</i>	<i>MNX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	5.47		0.086	0.269
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				

1
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAPA-12-13345(303443003MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 12-1254

Matrix: WATER

GEL Sample ID: 1202647847

Sample Amount 930 mL

Date Received: 01-MAY-12

Moisture: .

Extraction Batch ID: 1208646

Extraction Type Sol Exchange

Date Extracted: 02-MAY-12

Concentrated Extract Volume (mL) 5

Injection Volume (uL): 50

GEL data file: EXS05090027.wiff

Date Analyzed: 09-MAY-12 21:30

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
3058-38-6	TATB	2.94		0.323	1.08
<i>3058-38-6</i>	<i>TATB</i>				
78-30-8	tris(o-cresyl) phosphate	3.38		0.323	1.08
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	4.33		0.538	2.69
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.4		0.538	2.69
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	4.56		0.323	1.08
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1254Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 21-MAY-12 12:49GEL Data File: EXP0521001.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1254Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 21-MAY-12 13:23GEL Data File: EXP0521002.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

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

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1254Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 09-MAY-12 14:15GEL Data File: EXS05090001.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
tris(o-cresyl) phosphate	0	1.84
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
3,4-Dinitrotoluene	0	0

Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 12-1254Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 09-MAY-12 14:32GEL Data File: EXS05090002.wiffInstrument ID: LCMSMSColumn: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 21-MAY-12 17:28

GEL Data File: EXP0521009.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 21-MAY-12 18:38

GEL Data File: EXP0521011.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 21-MAY-12 21:32

GEL Data File: EXP0521016.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 22-MAY-12 02:12

GEL Data File: EXP0521024.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 22-MAY-12 03:56

GEL Data File: EXP0521027.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK07

Analysis Date: 22-MAY-12 09:11

GEL Data File: EXP0521036.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 22-MAY-12 14:26

GEL Data File: EXP0521045.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 22-MAY-12 20:15

GEL Data File: EXP0521055.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 23-MAY-12 03:15

GEL Data File: EXP0521067.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK11

Analysis Date: 23-MAY-12 08:29

GEL Data File: EXP0521076.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

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

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 09-MAY-12 16:46

GEL Data File: EXS05090010.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	8.7
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 09-MAY-12 17:19

GEL Data File: EXS05090012.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	4.29
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 09-MAY-12 19:50

GEL Data File: EXS05090021.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.38
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

4A
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 12-1254

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 09-MAY-12 22:20

GEL Data File: EXS05090030.wiff

Instrument ID: LCMSMS

Column: Phenomenex Ultracarb 5u ODS(20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	3.76
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International (ARSL)
SDG 12-1254**

Sample Analysis

Sample ID	Client ID
303489002	CAPA-12-13288
1202648015	Method Blank (MB) ICP
1202648016	Laboratory Control Sample (LCS)
1202648019	303488001(CAPA-12-13290L) Serial Dilution (SD)
1202648017	303488001(CAPA-12-13290D) Sample Duplicate (DUP)
1202648018	303488001(CAPA-12-13290S) Matrix Spike (MS)
1202648010	Method Blank (MB) ICP-MS
1202648011	Laboratory Control Sample (LCS)
1202648014	303488001(CAPA-12-13290L) Serial Dilution (SD)
1202648012	303488001(CAPA-12-13290D) Sample Duplicate (DUP)
1202648013	303488001(CAPA-12-13290S) Matrix Spike (MS)
1202647537	Method Blank (MB) CVAA
1202647538	Laboratory Control Sample (LCS)
1202647541	303221003(CAPA-12-13287L) Serial Dilution (SD)
1202647539	303221003(CAPA-12-13287D) Sample Duplicate (DUP)
1202647540	303221003(CAPA-12-13287S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1208720, 1208718, 1208500 and 1214284
Prep Batch :	1208719, 1208717 and 1208499
Standard Operating Procedures:	GL-MA-E-013 REV# 20, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 24, GL-MA-E-010 REV# 25 and GL-GC-E-107 REV# 7
Analytical Method:	SW846 3005/6010B, SW846 3005/6020 DOE-AL, EPA 245.1/245.2 and SM 2340 B
Prep Method :	SW846 3005A and EPA 245.1/245.2 Prep

Preparation/Analytical Method Verification

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

System Configuration

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

The Metals analysis-ICP was performed on a P E 5300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

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

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

Calibration Information

Instrument Calibration

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

CRDL Requirements

All CRDL standard(s) met the referenced advisory control limits.

ICSA/ICSAB Statement

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

Continuing Calibration Blank (CCB) Requirements

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

Continuing Calibration Verification (CCV) Requirements

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

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

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Sample Statement

The following samples were selected as the quality control (QC) samples for this SDG: 303488001 (CAPA-12-13290)-ICP and ICP-MS and 303221003 (CAPA-12-13287)-CVAA.

Matrix Spike (MS) Recovery Statement

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

Duplicate Relative Percent Difference (RPD) Statement

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

Serial Dilution % Difference Statement

The serial dilution is used to assess matrix suppression or enhancement. Raw element concentrations that are 25X the IDL/MDL for CVAA, 50X the IDL/MDL for ICP, and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the acceptance criteria of less than 10% difference (%D).

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in

hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instruments. Dilutions were required for this SDG in order to minimize tin suppression due to matrix interferences.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

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

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

Data Exception (DER) Documentation

Data exception reports (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.

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

Hardness = 2.497 (Ca) + 4.118 (Mg)

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

Certification Statement

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

Review Validation:

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

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

Reviewer:  **Date:** 05/25/12

Sample Data Summary

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1254 GEL Work Order: 303489

The Qualifiers in this report are defined as follows:

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

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

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

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

Reviewed by



05/25/12

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 12-1254

METHOD TYPE: EPA

SAMPLE ID: 303489002

CLIENT ID: CAPA-12-13288

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 01-MAY-12

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7439-97-6	Mercury	0.067	ug/L	U		AV	0.067	1	MER536	051512W1-4
7631-86-9	Silica	31.9	mg/L			P	0.053	1	OPTIMA3	051112A-1
7429-90-5	Aluminum	68	ug/L	U		P	68	1	OPTIMA3	051112A-1
7440-36-0	Antimony	1	ug/L	U		MS	1	1	ICPMS6	120511-3
7440-38-2	Arsenic	1.7	ug/L	U		MS	1.7	1	ICPMS6	120511-3
7440-39-3	Barium	531	ug/L			P	1	1	OPTIMA3	051112A-1
7440-41-7	Beryllium	1	ug/L	U		P	1	1	OPTIMA3	051112A-1
7440-42-8	Boron	26.9	ug/L	J		P	15	1	OPTIMA3	051112A-1
7440-43-9	Cadmium	0.11	ug/L	U		MS	0.11	1	ICPMS6	120511-3
7440-70-2	Calcium	80500	ug/L			P	50	1	OPTIMA3	051112A-1
7440-47-3	Chromium	2	ug/L	U		MS	2	1	ICPMS6	120511-3
7440-48-4	Cobalt	1	ug/L	U		P	1	1	OPTIMA3	051112A-1
7440-50-8	Copper	3	ug/L	U		P	3	1	OPTIMA3	051112A-1
7439-89-6	Iron	30	ug/L	U		P	30	1	OPTIMA3	051112A-1
7439-92-1	Lead	0.5	ug/L	U		MS	0.5	1	ICPMS6	120511-3
7439-95-4	Magnesium	24400	ug/L			P	110	1	OPTIMA3	051112A-1
7439-96-5	Manganese	2	ug/L	U		P	2	1	OPTIMA3	051112A-1
7439-98-7	Molybdenum	0.767	ug/L			MS	0.165	1	ICPMS6	120511-3
7440-02-0	Nickel	3.26	ug/L			MS	0.5	1	ICPMS6	120511-3
7440-09-7	Potassium	8990	ug/L			P	50	1	OPTIMA3	051112A-1
7782-49-2	Selenium	1.5	ug/L	U		MS	1.5	1	ICPMS6	120511-3
7440-22-4	Silver	0.2	ug/L	U		MS	0.2	1	ICPMS6	120511-3
7440-23-5	Sodium	143000	ug/L			P	100	1	OPTIMA3	051112A-1
7440-24-6	Strontium	576	ug/L			P	1	1	OPTIMA3	051112A-1
7440-28-0	Thallium	0.45	ug/L	U		MS	0.45	1	ICPMS6	120511-3
7440-31-5	Tin	12.5	ug/L	U		P	12.5	5	OPTIMA3	051112A-1

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 12-1254

METHOD TYPE: EPA

SAMPLE ID: 303489002

CLIENT ID: CAPA-12-13288

CONTRACT: ESHL00210

MATRIX:W

DATE RECEIVED 01-MAY-12

LEVEL: Low %SOLIDS:

<u>CAS No</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>C</u>	<u>Qual</u>	<u>M*</u>	<u>MDL</u>	<u>DF</u>	<u>Inst ID</u>	<u>Analytical Run</u>
7440-61-1	Uranium	0.597	ug/L			MS	0.067	1	ICPMS6	120511-2
7440-62-2	Vanadium	1	ug/L	U		P	1	1	OPTIMA3	051112A-1
7440-66-6	Zinc	3.3	ug/L	U		P	3.3	1	OPTIMA3	051112A-1
	Hardness as CaCO3	302	mg/L				0.453	1	CALC001	

***Analytical Methods:**

MS SW846 3005/6020 DOE-AL

P SW846 3005/6010B

AV EPA 245.1/245.2

SM 2340 B

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 12-1254
Contract: ESHL00210
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>
1202647537	Mercury	-0.094	ug/L	+/-0.2	J	AV	0.067	0.2
1202648010	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	1.7	ug/L	+/-5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/-1	U	MS	0.11	1
	Chromium	2	ug/L	+/-10	U	MS	2	10
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Molybdenum	0.165	ug/L	+/-0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
1202648015	Aluminum	68	ug/L	+/-200	U	P	68	200
	Barium	1	ug/L	+/-5	U	P	1	5
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Calcium	50	ug/L	+/-200	U	P	50	200
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Sodium	100	ug/L	+/-300	U	P	100	300
	Copper	3	ug/L	+/-10	U	P	3	10
	Iron	30	ug/L	+/-100	U	P	30	100
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Manganese	2	ug/L	+/-10	U	P	2	10
	Potassium	50	ug/L	+/-150	U	P	50	150
	Silica	0.053	mg/L	+/-0.213	U	P	0.053	0.213
	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

*Analytical Methods:

MS SW846 3005/6020 DOE-AL
P SW846 3005/6010B
AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1254

Client ID: CAPA-12-13287S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 303221003

Spike ID: 1202647540

<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	1.99		0.067	U	2	99.3		AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1254

Client ID: CAPA-12-13290S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 303488001

Spike ID: 1202648013

<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	200		1	U	200	100		MS
Arsenic	ug/L	75-125	78.2		1.7	U	80	97.8		MS
Cadmium	ug/L	75-125	11.1		0.11	U	10	111		MS
Chromium	ug/L	75-125	49.3		2	U	50	94.7		MS
Lead	ug/L	75-125	39.8		0.5	U	40	99.5		MS
Molybdenum	ug/L	75-125	52.6		0.539		50	104		MS
Nickel	ug/L	75-125	47.8		1.62	J	50	92.3		MS
Selenium	ug/L	75-125	20.3		1.5	U	20	102		MS
Silver	ug/L	75-125	53.3		0.2	U	50	106		MS
Thallium	ug/L	75-125	92.4		0.45	U	100	92.2		MS
Uranium	ug/L	75-125	52.7		0.067	U	50	105		MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-5a-

Matrix Spike Summary

SDG NO. 12-1254

Client ID: CAPA-12-13290S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 303488001

Spike ID: 1202648018

<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	4870		72.2	J	5000	96		P
Barium	ug/L	75-125	750		273		500	95.4		P
Beryllium	ug/L	75-125	484		1	U	500	96.8		P
Boron	ug/L	75-125	513		18.2	J	500	99		P
Calcium	ug/L		51300		46200		5000	104	N/A	P
Cobalt	ug/L	75-125	464		1	U	500	92.6		P
Copper	ug/L	75-125	484		3	U	500	96.7		P
Iron	ug/L	75-125	4900		30	U	5000	97.8		P
Magnesium	ug/L	75-125	20000		14900		5000	103		P
Manganese	ug/L	75-125	466		2	U	500	93		P
Potassium	ug/L	75-125	10600		5990		5000	92		P
Silica	mg/L	75-125	50.4		40.5		10.7	92.5		P
Sodium	ug/L		36500		31200		5000	106	N/A	P
Strontium	ug/L	75-125	830		358		500	94.5		P
Tin	ug/L	75-125	489		12.5	U	500	97.8		P
Vanadium	ug/L	75-125	492		1	U	500	98.3		P
Zinc	ug/L	75-125	464		5.06	J	500	91.8		P

*Analytical Methods:

P

SW846 3005/6010B

Metals
–6–
Duplicate Sample Summary

SDG No.: 12-1254**Lab Code:** GEL**Contract:** ESHL00210**Client ID:** CAPA-12-13287D**Matrix:** LIQUID**Level:** Low**Sample ID:** 303221003**Duplicate ID:** 1202647539**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
–6–
Duplicate Sample Summary

SDG No.: 12–1254

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPA–12–13290D

Matrix: LIQUID

Level: Low

Sample ID: 303488001

Duplicate ID: 1202648012

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L		1 U		1 U				MS
Arsenic	ug/L		1.7 U		1.7 U				MS
Cadmium	ug/L		0.11 U		0.11 U				MS
Chromium	ug/L		2 U		2 U				MS
Lead	ug/L		0.5 U		0.5 U				MS
Molybdenum	ug/L	+/- .5	0.539		0.48 J		11.6		MS
Nickel	ug/L	+/- 2	1.62 J		1.73 J		6.39		MS
Selenium	ug/L		1.5 U		1.5 U				MS
Silver	ug/L		0.2 U		0.2 U				MS
Thallium	ug/L		0.45 U		0.45 U				MS
Uranium	ug/L		0.067 U		0.067 U				MS

*Analytical Methods:

MS SW846 3005/6020 DOE–AL

Metals
-6-
Duplicate Sample Summary

SDG No.: 12-1254

Lab Code: GEL

Contract: ESHL00210

Client ID: CAPA-12-13290D

Matrix: LIQUID

Level: Low

Sample ID: 303488001

Duplicate ID: 1202648017

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		72.2 J		68 U		200		P
Barium	ug/L	+/-20%	273		265		2.68		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-50	18.2 J		17.5 J		3.88		P
Calcium	ug/L	+/-20%	46200		45400		1.69		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%	14900		14600		2.36		P
Manganese	ug/L		2 U		2 U				P
Potassium	ug/L	+/-20%	5990		5830		2.7		P
Silica	mg/L	+/-20%	40.5		39.5		2.59		P
Sodium	ug/L	+/-20%	31200		30700		1.71		P
Strontium	ug/L	+/-20%	358		350		2.22		P
Tin	ug/L		12.5 U		12.5 U				P
Vanadium	ug/L		1 U		1 U				P
Zinc	ug/L	+/-10	5.06 J		5.17 J		2.15		P

*Analytical Methods:

P SW846 3005/6010B

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1254

Contract: ESHL00210

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>
1202647538	Mercury	ug/L	2	2.02		101	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1254

Contract: ESHL00210

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>
1202648011								
	Antimony	ug/L	50	50.6		101	80-120	MS
	Arsenic	ug/L	50	51.4		103	80-120	MS
	Cadmium	ug/L	50	53.1		106	80-120	MS
	Chromium	ug/L	50	49.5		99.1	80-120	MS
	Lead	ug/L	50	50.9		102	80-120	MS
	Molybdenum	ug/L	50	51.4		103	80-120	MS
	Nickel	ug/L	50	50.1		100	80-120	MS
	Selenium	ug/L	50	52.8		106	80-120	MS
	Silver	ug/L	50	55.2		110	80-120	MS
	Thallium	ug/L	50	49.3		98.7	80-120	MS
	Uranium	ug/L	50	50.9		102	80-120	MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-7-

Laboratory Control Sample Summary

SDG NO. 12-1254

Contract: ESHL00210

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>
1202648016								
	Aluminum	ug/L	5000	4860		97.3	80-120	P
	Barium	ug/L	500	486		97.2	80-120	P
	Beryllium	ug/L	500	477		95.4	80-120	P
	Boron	ug/L	500	477		95.4	80-120	P
	Calcium	ug/L	5000	4880		97.7	80-120	P
	Cobalt	ug/L	500	478		95.5	80-120	P
	Copper	ug/L	500	480		96.1	80-120	P
	Iron	ug/L	5000	4950		98.9	80-120	P
	Magnesium	ug/L	5000	5060		101	80-120	P
	Manganese	ug/L	500	475		95	80-120	P
	Potassium	ug/L	5000	4970		99.3	80-120	P
	Silica	mg/L	10.7	10.2		95.2	80-120	P
	Sodium	ug/L	5000	4890		97.7	80-120	P
	Strontium	ug/L	500	484		96.9	80-120	P
	Tin	ug/L	500	485		97	80-120	P
	Vanadium	ug/L	500	482		96.3	80-120	P
	Zinc	ug/L	500	462		92.4	80-120	P

*Analytical Methods:

P SW846 3005/6010B

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1254 **Client ID:** CAPA-12-13287L**Contract:** ESHL00210**Matrix:** LIQUID **Level:** Low**Sample ID:** 303221003 **Serial Dilution ID:** 1202647541

<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

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1254

Client ID: CAPA-12-13290L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 303488001

Serial Dilution ID: 1202648014

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Antimony	1	U	5	U				MS
Arsenic	1.7	U	8.5	U				MS
Cadmium	.11	U	.55	U				MS
Chromium	2	U	10	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	.539		.825	U	100			MS
Nickel	1.62	J	2.5	U	100			MS
Selenium	1.5	U	7.5	U				MS
Silver	.2	U	1	U				MS
Thallium	.45	U	2.25	U				MS
Uranium	.067	U	.335	U				MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-9-

Serial Dilution Sample Summary

SDG NO. 12-1254

Client ID: CAPA-12-13290L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 303488001

Serial Dilution ID: 1202648019

<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	72.2	J	340	U	100			P
Barium	273		265		2.8		10	P
Beryllium	1	U	5	U				P
Boron	18.2	J	75	U	100			P
Calcium	46200		46900		1.51		10	P
Cobalt	1	U	5	U				P
Copper	3	U	15	U				P
Iron	30	U	150	U				P
Magnesium	14900		15600		4.56		10	P
Manganese	2	U	10	U				P
Potassium	5990		6400		6.83		10	P
Silica	40500		40000		1.18		10	P
Sodium	31200		32100		2.64		10	P
Strontium	358		364		1.67		10	P
Tin	2.5	U	12.5	U				P
Vanadium	1	U	5	U				P
Zinc	5.06	J	16.5	U	100			P

*Analytical Methods:

P SW846 3005/6010B

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International (ARSL)
SDG 12-1254**

Method/Analysis Information

Product: Carbon, Total Organic

Analytical Batch: 1210398

Method: SW 9060 Total Organic Carbon

Sample Analysis

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

Sample ID	Client ID
303489001	CAPA-12-13278
1202652079	Method Blank (MB)
1202652080	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202652081	303221002(CAPA-12-13277) Post Spike (PS)
1202652082	Laboratory Control Sample (LCS)
1202655722	303971001(CAPA-12-13286) Sample Duplicate (DUP)
1202655723	303971001(CAPA-12-13286) 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# 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 Carbon analysis was performed on a O-I Analytical Model 1010 Total Organic Carbon Analyzer.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 303221002 (CAPA-12-13277) and 303971001 (CAPA-12-13286).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

A DER was not required for this SDG.

Additional Comments

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

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Specific Conductivity

Analytical Batch: 1210920

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
303489002	CAPA-12-13288
1202653382	Laboratory Control Sample (LCS)
1202653384	303488001(CAPA-12-13290) 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# 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 Conductivity analysis was performed on a Orion Star A212 Conductivity Meter.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303488001 (CAPA-12-13290).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

A DER was not required 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: 1208900 **Method:** EPA 150.1 pH

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202648410	Laboratory Control Sample (LCS)
1202648411	303489002(CAPA-12-13288) 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# 20.

Preparation/Analytical Method Verification

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

Calibration Information

The Electrode analysis was performed on a PerpHect pH Meter Orion 370.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information (CCV)

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303489002 (CAPA-12-13288).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

The following sample from this sample group was received by the lab outside of the method specified holding time: 303489002 (CAPA-12-13288).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1075256 303489002 (CAPA-12-13288).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Ion Chromatography

Analytical Batch: 1207431

Method: EPA 300.0 Anions Liquid 28 day

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202644914	Method Blank (MB)
1202644915	303221003(CAPA-12-13287) Sample Duplicate (DUP)
1202644916	303221003(CAPA-12-13287) Post Spike (PS)
1202644917	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-086 REV# 21.

Preparation/Analytical Method Verification

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

Calibration Information

The Ion Chromatography analysis was performed on a Dionex ICS-3000 Ion Chromatograph.

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1202644916 (CAPA-12-13287).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 1202644915 (CAPA-12-13287), 1202644916 (CAPA-12-13287) and 303489002 (CAPA-12-13288).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1076964 1202644916 (CAPA-12-13287).

Manual Integrations

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1202644915 (CAPA-12-13287), 1202644916 (CAPA-12-13287), 1202644917 (LCS) and 303489002 (CAPA-12-13288).

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Ammonia Nitrogen

Analytical Batch: 1209014 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1209011 **Method:** EEPA 350.2 Prep

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202648646	Method Blank (MB)
1202648648	303443003(CAPA-12-13345) Sample Duplicate (DUP)
1202648650	303443003(CAPA-12-13345) Matrix Spike (MS)
1202648652	303443003(CAPA-12-13345) Matrix Spike Duplicate (MSD)
1202648653	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-106 REV# 7.

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303443003 (CAPA-12-13345).

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

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

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries for this sample set were within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202648648 (CAPA-12-13345).

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The following sample was re-analyzed due to instrument failure: 1202648653 (LCS). The following samples were re-analyzed due to CCV failure: 1202648646 (MB) and 1202648653 (LCS). The following samples were re-analyzed to verify the results: 1202648646 (MB) and 1202648653 (LCS).

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required 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:	1207684	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1207679	Method:	EEPA 351.2 Prep

Sample Analysis

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

Sample ID	Client ID
303489001	CAPA-12-13278
1202645553	Method Blank (MB)
1202645554	303234001(CAPA-12-13281) Sample Duplicate (DUP)
1202645555	303234001(CAPA-12-13281) Matrix Spike (MS)
1202645556	303234001(CAPA-12-13281) Matrix Spike Duplicate (MSD)
1202645557	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-104 REV# 12.

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303234001 (CAPA-12-13281).

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

The spike recovery falls outside of the established acceptance limits due to matrix interference: 1202645555 (CAPA-12-13281).

Matrix Spike Duplicate (MSD) Recovery Statement

The spike duplicate recovery falls outside of the established acceptance limits due to matrix interference: 1202645556 (CAPA-12-13281).

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

The following DER was generated for this SDG: 1076467 1202645555 (CAPA-12-13281) and 1202645556

(CAPA-12-13281).

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:	1208644	Method:	EPA 353.2 Nitrogen and Nitrate/Nitrite

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202647828	Method Blank (MB)
1202647831	303443003(CAPA-12-13345) Sample Duplicate (DUP)
1202647834	303443003(CAPA-12-13345) Post Spike (PS)
1202647835	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-128 REV# 7.

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303443003 (CAPA-12-13345).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following sample in this sample group was diluted due to high concentration: 303489002 (CAPA-12-13288). The following samples in this sample group were diluted due to matrix interference: 1202647831 (CAPA-12-13345) and 1202647834 (CAPA-12-13345).

Sample Re-analysis

The following samples were re-analyzed due to CCV failure: 1202647828 (MB) and 1202647835 (LCS).

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required 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:	1207687	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1207685	Method:	EEPA 365.4 Prep

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202645562	Method Blank (MB)
1202645563	303221003(CAPA-12-13287) Sample Duplicate (DUP)
1202645564	303221003(CAPA-12-13287) Matrix Spike (MS)
1202645565	303221003(CAPA-12-13287) Matrix Spike Duplicate (MSD)
1202645566	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-103 REV# 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+ 8000 Series.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303221003 (CAPA-12-13287).

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

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

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recovery for this sample set was within the required acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the spike and spike duplicate met the acceptance limits.

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

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

A DER was not required 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, Total Dissolved

Analytical Batch: 1209153

Method: EPA 160.1 Solids and Dissolved-F

Sample Analysis

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

Sample ID	Client ID
303489002	CAPA-12-13288
1202648997	Method Blank (MB)
1202648998	303443003(CAPA-12-13345) Sample Duplicate (DUP)
1202648999	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 11.

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303443003 (CAPA-12-13345).

Duplicate Relative Percent Difference (RPD) Statement

The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202648998 (CAPA-12-13345).

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 Re-analysis

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

Sample Aliquot

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

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

The following DER was generated for this SDG: 1077517 303489002 (CAPA-12-13288).

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: 1210449 **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
303489002	CAPA-12-13288
1202652186	303443003(CAPA-12-13345) Sample Duplicate (DUP)
1202652190	303443003(CAPA-12-13345) Matrix Spike (MS)
1202652192	Laboratory Control Sample (LCS)

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

SOP Reference

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

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 303443003 (CAPA-12-13345).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

A DER was not required for this SDG.

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement


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

Review Validation:

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

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

Reviewer:



Date:

25May12

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1254 GEL Work Order: 303489

The Qualifiers in this report are defined as follows:

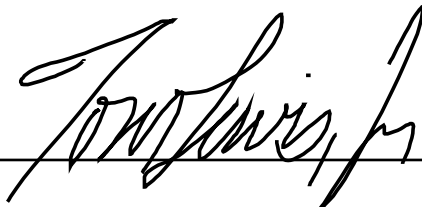
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- H Analytical holding time was exceeded
- J Value is estimated
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was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

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

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

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

Reviewed by

A handwritten signature in black ink, appearing to read "Tom Davis", is written over a horizontal line.

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 24, 2012

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545
Contact: Keith Greene
Project: LANL-WQH Water Samples

Client SDG: 12-1254

Client Sample ID: CAPA-12-13278
Sample ID: 303489001
Matrix: W
Collect Date: 30-APR-12 09:37
Receive Date: 01-MAY-12
Collector: Client

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Carbon Analysis											
SW 9060 Total Organic Carbon "As Received"											
Total Organic Carbon Average		1.52	0.330	1.00	mg/L	1	TSM	05/11/12	1758	1210398	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	J	0.0425	0.035	0.100	mg/L	1	KLP1	05/08/12	1013	1207684	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 351.2 Prep	EPA 351.2 Total Kjeldahl Nitrogen Prep	KLP1	05/07/12	1405	1207679

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 24, 2012

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Contact: Keith Greene
Project: LANL-WQH Water Samples

Client SDG: 12-1254

Client Sample ID: CAPA-12-13288
Sample ID: 303489002
Matrix: W
Collect Date: 30-APR-12 09:37
Receive Date: 01-MAY-12
Collector: Client

Project: ESHL00210
Client ID: ARSL001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Conductivity Analysis											
EPA120.1 Specific Conductivity "As Received"											
Conductivity		1440	1.00	1.00	umhos/cm	1	TXT1	05/09/12	1225	1210920	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 17.0C	H	6.78	0.010	0.100	SU	1	LXA1	05/02/12	1510	1208900	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	J	0.0915	0.067	0.200	mg/L	1	MAR1	05/08/12	0435	1207431	3
Fluoride		0.117	0.033	0.100	mg/L	1					
Sulfate		33.6	0.133	0.400	mg/L	1					
Chloride		354	3.35	10.0	mg/L	50	MAR1	05/08/12	2159	1207431	4
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	05/04/12	1044	1209014	5
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		2.13	0.085	0.250	mg/L	5	AXH3	05/08/12	0947	1208644	6
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P		0.0532	0.017	0.050	mg/L	1	KLP1	05/09/12	1524	1207687	7
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		834	3.40	14.3	mg/L		LYG1	05/03/12	1019	1209153	8
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		70.9	0.725	1.00	mg/L		LXA1	05/08/12	1728	1210449	9
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	05/03/12	1258	1209011
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	05/09/12	1245	1207685

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: May 24, 2012

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Contact: Keith Greene
Project: LANL-WQH Water Samples

Client SDG: 12-1254

Client Sample ID: CAPA-12-13288
Sample ID: 303489002

Project: ESHL00210
Client ID: ARSL001

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 24, 2012
Page 1 of 4

Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico

Contact: Keith Greene

Workorder: 303489

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1210398										
QC1202652080	303221002	DUP									
Total Organic Carbon Average		4.18		4.15	mg/L	0.865	^	(+/-1.00)	TSM	05/11/12	16:22
QC1202655722	303971001	DUP									
Total Organic Carbon Average		1.71		1.70	mg/L	0.234	^	(+/-1.00)		05/11/12	23:18
QC1202652082	LCS										
Total Organic Carbon Average	10.0			9.59	mg/L			95.9 (85%-115%)		05/11/12	15:41
QC1202652079	MB										
Total Organic Carbon Average			U	ND	mg/L					05/11/12	15:32
QC1202652081	303221002	PS									
Total Organic Carbon Average	10.0	4.18		12.8	mg/L			86.2 (65%-120%)		05/11/12	16:42
QC1202655723	303971001	PS									
Total Organic Carbon Average	10.0	1.71		11.1	mg/L			94.3 (65%-120%)		05/11/12	23:37
Conductivity Analysis											
Batch	1210920										
QC1202653384	303488001	DUP									
Conductivity		569		569	umhos/cm	0.00		(0%-10%)	TXT1	05/09/12	12:24
QC1202653382	LCS										
Conductivity	1410			1420	umhos/cm			100 (95%-105%)		05/09/12	12:17
Electrode Analysis											
Batch	1208900										
QC1202648411	303489002	DUP									
pH		H	6.78	H	6.79	SU	0.147	(0%-10%)	LXA1	05/02/12	15:13
QC1202648410	LCS										
pH					7.03	SU		(99%-101%)		05/02/12	15:06
Ion Chromatography											
Batch	1207431										
QC1202644915	303221003	DUP									
Bromide		U	ND	U	ND	mg/L	N/A		MAR1	05/08/12	01:51
Chloride			130		130	mg/L	0.110	(0%-20%)		05/08/12	20:21
Fluoride			0.133		0.134	mg/L	1.12	^ (+/-0.100)		05/08/12	01:51
Sulfate			13.3		13.8	mg/L	4.10	(0%-20%)			
QC1202644917	LCS										
Bromide	2.50				2.60	mg/L		104 (90%-110%)		05/08/12	00:45
Chloride	10.0				9.73	mg/L		97.3 (90%-110%)			
Fluoride	5.00				5.09	mg/L		102 (90%-110%)			
Sulfate	20.0				20.0	mg/L		99.8 (90%-110%)			
QC1202644914	MB										
Bromide			U		ND	mg/L				05/08/12	00:12
Chloride			U		ND	mg/L					
Fluoride			U		ND	mg/L					
Sulfate			U		ND	mg/L					

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 2 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1207431										
QC1202644916	303221003	PS									
Bromide	2.50	U	ND	2.64	mg/L		103	(90%-110%)	MAR1	05/08/12	02:24
Chloride	10.0		13.0	24.6	mg/L		116 *	(90%-110%)		05/08/12	20:54
Fluoride	5.00		0.133	5.13	mg/L		99.9	(90%-110%)		05/08/12	02:24
Sulfate	20.0		13.3	35.5	mg/L		111 *	(90%-110%)			
Nutrient Analysis											
Batch	1207684										
QC1202645554	303234001	DUP									
Nitrogen, Total Kjeldahl		U	ND	U	ND	mg/L	N/A		KLP1	05/08/12	10:06
QC1202645557	LCS										
Nitrogen, Total Kjeldahl	1.00			0.928	mg/L		92.8	(90%-110%)		05/08/12	10:01
QC1202645553	MB										
Nitrogen, Total Kjeldahl			U	ND	mg/L					05/08/12	10:00
QC1202645555	303234001	MS									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.875	mg/L		87.5 *	(90%-110%)		05/08/12	10:07
QC1202645556	303234001	MSD									
Nitrogen, Total Kjeldahl	1.00	U	ND	0.882	mg/L	0.797	88.2 *	(0%-20%)		05/08/12	10:07
Batch	1207687										
QC1202645563	303221003	DUP									
Phosphorus, Total as P		J	0.0396	J	0.0462	mg/L	15.4 ^	(+/-0.050)	KLP1	05/09/12	15:14
QC1202645566	LCS										
Phosphorus, Total as P	1.00			0.984	mg/L		98.4	(84%-122%)		05/09/12	15:13
QC1202645562	MB										
Phosphorus, Total as P			U	ND	mg/L					05/09/12	15:12
QC1202645564	303221003	MS									
Phosphorus, Total as P	1.00	J	0.0396	1.02	mg/L		98	(46%-146%)		05/09/12	15:15
QC1202645565	303221003	MSD									
Phosphorus, Total as P	1.00	J	0.0396	1.03	mg/L	0.976	99	(0%-21%)		05/09/12	15:16
Batch	1208644										
QC1202647831	303443003	DUP									
Nitrogen, Nitrate/Nitrite		U	ND	U	ND	mg/L	N/A		AXH3	05/08/12	11:04
QC1202647835	LCS										
Nitrogen, Nitrate/Nitrite	1.00			0.985	mg/L		98.5	(90%-110%)		05/08/12	09:22
QC1202647828	MB										
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					05/08/12	09:20
QC1202647834	303443003	PS									
Nitrogen, Nitrate/Nitrite	1.00	U	ND	1.07	mg/L		107	(90%-110%)		05/08/12	11:05
Batch	1209014										
QC1202648648	303443003	DUP									
Nitrogen, Ammonia		U	ND	U	ND	mg/L	N/A		KLP1	05/04/12	10:41
QC1202648653	LCS										
Nitrogen, Ammonia	1.00			1.03	mg/L		103	(90%-110%)		05/04/12	10:27
QC1202648646	MB										
Nitrogen, Ammonia			U	ND	mg/L					05/04/12	10:26
QC1202648650	303443003	MS									
Nitrogen, Ammonia	1.00	U	ND	1.11	mg/L		110	(90%-110%)		05/04/12	10:42
QC1202648652	303443003	MSD									

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 3 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1209014										
Nitrogen, Ammonia	1.00	U	ND	1.09	mg/L	1.82	108	(0%-15%)		05/04/12	10:42
Solids Analysis											
Batch	1209153										
QC1202648998	303443003	DUP									
Total Dissolved Solids		U	ND	U	ND	mg/L	N/A		LYG1	05/03/12	10:19
QC1202648999	LCS										
Total Dissolved Solids	300				300	mg/L		100	(95%-105%)	05/03/12	10:19
QC1202648997	MB										
Total Dissolved Solids			U		ND	mg/L				05/03/12	10:19
Titration Analysis											
Batch	1210449										
QC1202652186	303443003	DUP									
Alkalinity, Total as CaCO3		U	ND	U	ND	mg/L	N/A		LXA1	05/08/12	16:41
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1202652192	LCS										
Alkalinity, Total as CaCO3	50.0				51.1	mg/L		102	(90%-110%)	05/08/12	15:35
QC1202652190	303443003	MS									
Alkalinity, Total as CaCO3	50.0	U	ND		51.6	mg/L		102	(80%-120%)	05/08/12	16:46

Notes:

RER is calculated at the 95% confidence level (2-sigma).

The Qualifiers in this report are defined as follows:

- ** Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
- 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
- E General Chemistry--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
- E Organics--Concentration of the target analyte exceeds the instrument calibration range
- F Estimated Value
- FB Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 4 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
M	Matrix Related Failure										
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	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										
P	Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.										
UI	Gamma Spectroscopy--Uncertain identification										
UJ	Gamma Spectroscopy--Uncertain identification										
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	QC Samples were not spiked with this compound										
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										
h	Preparation or preservation holding time was exceeded										

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

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

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

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

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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 03-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ELECTRODE	Test / Method: EPA 150.1	Matrix Type: Liquid	Client Code: ESHL, PAES
Batch ID: 1208900	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303488(12-1253),303489(12-1254),303565 Application Issues: Sample received out of holding			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Sample received out of holding: 303488 001 303489 002 303565 001		1. Samples were received out of holding.	

Originator's Name:
Lindsey Jensen 03-MAY-12

Data Validator/Group Leader:
Julia Hamilton 11-MAY-12

DATA EXCEPTION REPORT

Mo.Day Yr. 08-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2	Matrix Type: Liquid	Client Code: BETT, ESHL
Batch ID: 1207684	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303187,303221(12-1236),303234(12-1241),303443(12-1249),303489(12-1254),303613(12-1268) Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Failed Recovery for MS/MSD: QC 1202645555MS, QC 1202645556MSD		1. The MS recovery falls outside of the established acceptance limits. The MSD verifies the recovery failure with a passing RPD; therefore, the failure is attributed to matrix interference.	

Originator's Name:

Kristen Parson 08-MAY-12

Data Validator/Group Leader:

Julia Hamilton 21-MAY-12

DATA EXCEPTION REPORT			
Mo.Day Yr. 09-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: IC	Test / Method: EPA 300.0	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1207431	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 303221(12-1236),303234(12-1241),303443(12-1249),303488(12-1253),303489(12-1254) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed Recovery for MS/PS: QC 1202644916PS		1. The MS/PS failed required acceptance limits for chloride and sulfate due to matrix interference. Of the remaining anions in the MS/PS, all except Orthophosphate required acceptance limits. This failure is attributed to the matrix of the sample because the successful recovery of the other compounds indicate that the laboratory process was in control. This variance is judged to have no negative impact on the data. The deviation is noted in the Case Narrative and DER, and the data has been reported.	

Originator's Name:
Mary Sherwood 09-MAY-12

Data Validator/Group Leader:
Virginia Wininger 09-MAY-12

DATA EXCEPTION REPORT			
Mo.Day Yr. 10-MAY-12	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: BALANCE	Test / Method: SM 2540C	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1209153	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 303353,303443(12-1249),303488(12-1253),303489(12-1254),303596,303613(12-1268) Application Issues: Other			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Consecutive weight check criteria not met: 303488001 and 303489002		1. In order to meet consecutive weight check criteria, weight events must be within 0.0005g of each other. After initial weight checks failed this criteria, the analyst performed two additional weight events for Total Dissolved Solids. After four weight events, the analyst was unable to get the samples to conform to the criteria. The failure to meet weighback criteria is attributed to the matrix of the samples.	

Originator's Name:

Lisa Gregory 10-MAY-12

Data Validator/Group Leader:

Julia Hamilton 11-MAY-12

Radiological Analysis

**Radiochemistry Case Narrative
ARS International (ARSL)
SDG 12-1254
Work Order 303489**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1207310

Sample ID	Client ID
303489001	CAPA-12-13278
1202644608	Method Blank (MB)
1202644609	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644610	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202644608 (MB) and 1202644610 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

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

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1078237 was generated due to RDL less than MDA. 1. Samples 303221002, 303234001, 303489001, 303750001, 303750003, 303750005, 303750007, 1202644608, and 1202644609 did not meet the Am-241 detection limit. 1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The samples did meet the client's tracer yield requirement and were counted for 1000 minutes to achieve the lowest MDC possible. Reporting results.

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	Alphaspec Pu, Liquid
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1207311

Sample ID	Client ID
303489001	CAPA-12-13278
1202644611	Method Blank (MB)
1202644612	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644613	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202644611 (MB) and 1202644613 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

Sample 303489001 (CAPA-12-13278) was recounted due to high MDC. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation

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

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: Alphaspec U, Liquid
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number: 1207313

Sample ID	Client ID
303489001	CAPA-12-13278
1202644614	Method Blank (MB)
1202644615	303221002(CAPA-12-13277) Sample Duplicate (DUP)
1202644616	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:**Calibration Information**

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

Standards Information

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

Sample Geometry

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

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

Aliquots for samples 1202644614 (MB) and 1202644616 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303221002 (CAPA-12-13277). The QC was from ARSL work order 303221.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

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

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

Manual Integration

No manual integrations were performed on data in this batch.

Additional Comments

The MDCs are calculated using a blank population.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: **Gammasec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1208334

Sample ID	Client ID
303489001	CAPA-12-13278
1202647096	Method Blank (MB)
1202647097	303234001(CAPA-12-13281) Sample Duplicate (DUP)
1202647098	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 24.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in August 2011, November 2011, February 2012 and March 2012.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 303234001 (CAPA-12-13281). The QC was from ARSL work order 303234.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202647096 (MB) result is greater than 1.65 times the CSU but less than the MDC for K-40.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Miscellaneous Information:

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank 1202647096 (MB) result is greater than the decision level but less than the MDC for K-40.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: GFPC, Sr90, liquid
Analytical Method: EPA 905.0 Modified
Analytical Batch Number: 1210551

Sample ID	Client ID
303489001	CAPA-12-13278
1202652528	Method Blank (MB)
1202652529	303489001(CAPA-12-13278) Sample Duplicate (DUP)
1202652530	303489001(CAPA-12-13278) Matrix Spike (MS)
1202652531	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 15.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in April 2012.

Calibration Information

All of the calibration verification standard requirements were met.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202652528 (MB) and 1202652531 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303489001 (CAPA-12-13278). The QC was from ARSL work order 303489.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202652528 (MB) result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

Sample 1202652528 (MB) was recounted due to high MDC. The recount is reported.

Chemical Recoveries

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

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

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

Additional Comments

The matrix spike, 1202652530 (CAPA-12-13278), aliquot was reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	WSP-GrossA/B
Analytical Method:	EPA 900.0/SW846 9310
Analytical Batch Number:	1212200

Sample ID	Client ID
303489001	CAPA-12-13278
1202656703	Method Blank (MB)
1202656704	303859001(CAPA-12-13285) Sample Duplicate (DUP)
1202656705	303859001(CAPA-12-13285) Matrix Spike (MS)
1202656706	303859001(CAPA-12-13285) Matrix Spike Duplicate (MSD)
1202656707	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as

Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 15.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibration was performed in September 2011. The discrimination settings are calibrated in beta discriminating mode to reduce beta to alpha crosstalk.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202656703 (MB) and 1202656707 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 303859001 (CAPA-12-13285). The QC was from ARSL work order 303859.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank result is less than 1.65 times the CSU.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

Chemical Recoveries

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

Gross Alpha/Beta Preparation Information

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

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced

SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments

The matrix spike and matrix spike duplicate, 1202656705 (CAPA-12-13285) and 1202656706 (CAPA-12-13285), aliquots were reduced to conserve sample volume.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 12-1254 GEL Work Order: 303489

The Qualifiers in this report are defined as follows:

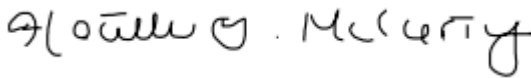
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Review/Validation

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

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

Signature:



Name: Heather McCarty

Date: 25 MAY 2012

Title: Analyst II

DATA EXCEPTION REPORT			
Mo.Day Yr. 14-MAY-12	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Am-05-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1207310	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 303221(12-1236),303234(12-1241),303489(12-1254),303750(12-1274) Application Issues: RDL less than MDA			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. Samples 303221002, 303234001, 303489001, 303750001, 303750003, 303750005, 303750007, 1202644608, and 1202644609 did not meet the Am-241 detection limit.		1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The samples did meet the client's tracer yield requirement and were counted for 1000 minutes to achieve the lowest MDC possible. Reporting results.	

Originator's Name:
Melanie Aycock 14-MAY-12

Data Validator/Group Leader:
Denise Smalls 15-MAY-12

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
 Address : PO Box 1663
 TA-03, SM271, Drop Pt. 02U, Rm111
 Los Alamos, New Mexico 87545
 Contact: Keith Greene
 Project: LANL-WQH Water Samples

Report Date: May 25, 2012

Client Sample ID: CAPA-12-13278
 Sample ID: 303489001
 Matrix: W
 Collect Date: 30-APR-12
 Receive Date: 01-MAY-12
 Collector: Client

Project: ESHL00210
 Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
<i>Alphaspec Am241 Liquid "As Received"</i>													
Americium-241	U	0.0156	+/-0.0136	0.0746	+/-0.0136	0.050	pCi/L		JXD2	05/12/12	1152	1207310	1
<i>Alphaspec Pu, Liquid "As Received"</i>													
Plutonium-238	U	-0.00278	+/-0.00393	0.0431	+/-0.00393	0.050	pCi/L		JXD2	05/17/12	1407	1207311	2
Plutonium-239/240	U	-0.00278	+/-0.00621	0.0366	+/-0.00621	0.050	pCi/L						
<i>Alphaspec U, Liquid "As Received"</i>													
Uranium-234		0.339	+/-0.0348	0.0558	+/-0.0414	1.00	pCi/L		JXD2	05/15/12	1740	1207313	3
Uranium-235/236	U	0.0103	+/-0.00906	0.0399	+/-0.00909	1.00	pCi/L						
Uranium-238		0.221	+/-0.0273	0.0282	+/-0.031	0.500	pCi/L						
Rad Gamma Spec Analysis													
<i>Gammasepec "As Received"</i>													
Cesium-137	U	1.23	+/-1.30	5.12	+/-1.30	8.00	pCi/L		MJH1	05/10/12	1014	1208334	4
Cobalt-60	U	3.30	+/-1.56	6.84	+/-1.56	8.00	pCi/L						
Neptunium-237	U	2.17	+/-2.91	10.4	+/-2.91	10.0	pCi/L						
Potassium-40	U	0.0763	+/-20.4	74.6	+/-20.4	10.0	pCi/L						
Sodium-22	U	0.245	+/-1.37	5.37	+/-1.37	10.0	pCi/L						
Rad Gas Flow Proportional Counting													
<i>GFPC, Sr90, liquid "As Received"</i>													
Strontium-90	U	-0.158	+/-0.130	0.480	+/-0.130	0.500	pCi/L		VXC2	05/25/12	0944	1210551	5
<i>WSP-GrossA/B "As Received"</i>													
Beta		5.12	+/-1.04	2.99	+/-1.12	3.00	pCi/L		BXF1	05/24/12	0954	1212200	6
Alpha	U	0.0645	+/-0.640	2.95	+/-0.641	3.00	pCi/L		BXF1	05/25/12	0823	1212200	7

The following Analytical Methods were performed

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

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Liquid "As Received"	1207310	70.6	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1207311	55.7	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1207313	71.4	(50%-105%)
Strontium Carrier	GFPC, Sr90, liquid "As Received"	1210551	90.0	(50%-105%)

GEL LABORATORIES LLC

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

Certificate of Analysis

Company : Los Alamos National Laboratory
Address : PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm111
Los Alamos, New Mexico 87545

Report Date: May 25, 2012

Contact: Keith Greene

Project: LANL-WQH Water Samples

Client Sample ID: CAPA-12-13278

Sample ID: 303489001

Project: ESHL00210

Client ID: ARSL001

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

Notes:

TPU and Uncertainty are calculated at the 67% confidence level (1-sigma).

Quality Control Data

GEL LABORATORIES LLC

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

QC Summary

Report Date: May 25, 2012

Page 1 of 6

Client : Los Alamos National Laboratory
PO Box 1663
TA-03, SM271, Drop Pt. 02U, Rm
Los Alamos, New Mexico
Contact: Keith Greene
Workorder: 303489

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1207310										
QC1202644609	303221002	DUP									
Americium-241	U	0.0244	U	0.0151	pCi/L	0.157		(0-1)	JXD2	05/12/1211:53	
	Uncert:	+/-0.0161		+/-0.0133							
	TPU:	+/-0.0162		+/-0.0133							
	Yield:	72.4		84.2							
QC1202644610	LCS										
Americium-241	1.42			1.39	pCi/L		97.8	(80%-120%)		05/12/1211:53	
	Uncert:			+/-0.0508							
	TPU:			+/-0.0767							
	Yield:			97.5							
QC1202644608	MB										
Americium-241			U	-0.0334	pCi/L					05/12/1211:53	
	Uncert:			+/-0.0164							
	TPU:			+/-0.0164							
	Yield:			66.6							
Batch	1207311										
QC1202644612	303221002	DUP									
Plutonium-238	U	-0.0151	U	-0.0402	pCi/L	0.587		(0-1)	JXD2	05/15/1218:34	
	Uncert:	+/-0.00796		+/-0.0135							
	TPU:	+/-0.00797		+/-0.0135							
	Yield:	76.5		67.0							
Plutonium-239/240	U	-0.00903	U	0.00	pCi/L	0.366		(0-1)			
	Uncert:	+/-0.00796		+/-0.00437							
	TPU:	+/-0.00796		+/-0.00438							
	Yield:	76.5		67.0							
QC1202644613	LCS										
Plutonium-238			U	0.00211	pCi/L			(80%-120%)		05/15/1218:34	
	Uncert:			+/-0.00761							
	TPU:			+/-0.00761							
	Yield:			83.3							
Plutonium-239/240	2.03			2.07	pCi/L		102	(80%-120%)			
	Uncert:			+/-0.0662							
	TPU:			+/-0.128							
	Yield:			83.3							
QC1202644611	MB										
Plutonium-238			U	0.00932	pCi/L					05/15/1218:33	
	Uncert:			+/-0.00737							
	TPU:			+/-0.00738							
	Yield:			74.3							
Plutonium-239/240			U	-0.00699	pCi/L						
	Uncert:			+/-0.00521							
	TPU:			+/-0.00521							
	Yield:			74.3							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 2 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1207313										
QC1202644615	303221002	DUP									
Uranium-234	U	0.066	U	0.055	pCi/L	0.144		(0-1)	JXD2	05/15/12	18:41
	Uncert:	+/-0.0186		+/-0.0186							
	TPU:	+/-0.0192		+/-0.019							
	Yield:	66.4		67.2							
Uranium-235/236	U	0.00156	U	-0.00244	pCi/L	0.135		(0-1)			
	Uncert:	+/-0.00685		+/-0.00793							
	TPU:	+/-0.00686		+/-0.00794							
	Yield:	66.4		67.2							
Uranium-238	U	0.0237	U	0.0115	pCi/L	0.282		(0-1)			
	Uncert:	+/-0.0115		+/-0.0101							
	TPU:	+/-0.0116		+/-0.0101							
	Yield:	66.4		67.2							
QC1202644616	LCS										
Uranium-234				2.45	pCi/L						
	Uncert:			+/-0.0822							
	TPU:			+/-0.182							
	Yield:			78.4							
Uranium-235/236				0.155	pCi/L						
	Uncert:			+/-0.0228							
	TPU:			+/-0.025							
	Yield:			78.4							
Uranium-238	2.67			2.55	pCi/L		95.4	(80%-120%)			
	Uncert:			+/-0.0833							
	TPU:			+/-0.189							
	Yield:			78.4							
QC1202644614	MB										
Uranium-234			U	-0.00317	pCi/L						
	Uncert:			+/-0.00738							
	TPU:			+/-0.00738							
	Yield:			83.5							
Uranium-235/236			U	-0.00629	pCi/L						
	Uncert:			+/-0.00466							
	TPU:			+/-0.00466							
	Yield:			83.5							
Uranium-238			U	0.00132	pCi/L						
	Uncert:			+/-0.00411							
	TPU:			+/-0.00411							
	Yield:			83.5							
Rad Gamma Spec											
Batch	1208334										
QC1202647097	303234001	DUP									
Cesium-137	U	1.85	U	0.869	pCi/L	0.159		(0-1)	MJH1	05/10/12	12:19
	Uncert:	+/-1.67		+/-1.41							
	TPU:	+/-1.67		+/-1.41							
Cobalt-60	U	3.13	U	-1.91	pCi/L	0.797		(0-1)			
	Uncert:	+/-1.57		+/-1.59							
	TPU:	+/-1.57		+/-1.59							

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 3 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1208334										
Neptunium-237	U	1.94	U	2.80	pCi/L	0.0756		(0-1)			
	Uncert:	+/-2.69		+/-3.03							
	TPU:	+/-2.69		+/-3.03							
Potassium-40	U	-30.2	U	16.7	pCi/L	0.626		(0-1)			
	Uncert:	+/-16.4		+/-21.0							
	TPU:	+/-16.4		+/-21.0							
Sodium-22	U	-0.20	U	-1.35	pCi/L	0.210		(0-1)			
	Uncert:	+/-1.22		+/-1.51							
	TPU:	+/-1.22		+/-1.51							
QC1202647098 LCS											
Americium-241	2780			2910	pCi/L		104	(80%-120%)		05/10/12	11:59
	Uncert:			+/-186							
	TPU:			+/-186							
Cesium-137	6160			6350	pCi/L		103	(80%-120%)			
	Uncert:			+/-270							
	TPU:			+/-270							
Cobalt-60	6050			6060	pCi/L		100	(80%-120%)			
	Uncert:			+/-254							
	TPU:			+/-254							
Neptunium-237			U	-16.1	pCi/L						
	Uncert:			+/-27.1							
	TPU:			+/-27.1							
Potassium-40			U	119	pCi/L						
	Uncert:			+/-68.6							
	TPU:			+/-68.6							
Sodium-22			U	-12.9	pCi/L						
	Uncert:			+/-8.76							
	TPU:			+/-8.76							
QC1202647096 MB											
Cesium-137			U	0.238	pCi/L					05/10/12	11:40
	Uncert:			+/-1.35							
	TPU:			+/-1.35							
Cobalt-60			U	-7.63	pCi/L						
	Uncert:			+/-1.93							
	TPU:			+/-1.93							
Neptunium-237			U	-5.24	pCi/L						
	Uncert:			+/-2.93							
	TPU:			+/-2.93							
Potassium-40			U	32.4	pCi/L						
	Uncert:			+/-17.3							
	TPU:			+/-17.3							
Sodium-22			U	-0.034	pCi/L						
	Uncert:			+/-1.62							
	TPU:			+/-1.62							
Rad Gas Flow											
Batch	1210551										
QC1202652529 303489001 DUP											
Strontium-90	U	-0.158	U	0.0466	pCi/L	0.383		(0-1)	VXC2	05/25/12	09:44

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 4 of 6

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1210551										
		Uncert:	+/-0.130	+/-0.137							
		TPU:	+/-0.130	+/-0.137							
		Yield:	90.0	91.1							
QC1202652531	LCS										
Strontium-90		25.1		22.4	pCi/L		89.3	(80%-120%)		05/25/1209:48	
		Uncert:		+/-0.633							
		TPU:		+/-1.92							
		Yield:		94.4							
QC1202652528	MB										
Strontium-90			U	0.228	pCi/L					05/25/1216:27	
		Uncert:		+/-0.133							
		TPU:		+/-0.134							
		Yield:		90.0							
QC1202652530	303489001	MS									
Strontium-90		126	U	-0.158	pCi/L		93.5	(75%-125%)		05/25/1209:48	
		Uncert:		+/-0.130							
		TPU:		+/-0.130							
		Yield:		90.0							
Batch	1212200										
QC1202656704	303859001	DUP									
Alpha			U	0.746	pCi/L	0.463		(0-1)	BXF1	05/25/1208:31	
		Uncert:		+/-0.543							
		TPU:		+/-0.547							
Beta			U	1.47	pCi/L	0.109		(0-1)		05/24/1210:00	
		Uncert:		+/-0.722							
		TPU:		+/-0.733							
QC1202656707	LCS										
Alpha		12.0		11.4	pCi/L		94.4	(80%-120%)		05/25/1208:15	
		Uncert:		+/-0.568							
		TPU:		+/-1.13							
Beta		50.2		56.3	pCi/L		112	(80%-120%)		05/24/1207:49	
		Uncert:		+/-0.985							
		TPU:		+/-4.83							
QC1202656703	MB										
Alpha			U	-0.0173	pCi/L					05/25/1208:31	
		Uncert:		+/-0.0535							
		TPU:		+/-0.0536							
Beta			U	-0.0467	pCi/L					05/24/1209:56	
		Uncert:		+/-0.149							
		TPU:		+/-0.149							
QC1202656705	303859001	MS									
Alpha		241	U	0.746	pCi/L		91.8	(75%-125%)		05/25/1208:15	
		Uncert:		+/-0.543							
		TPU:		+/-0.547							
Beta		1000	U	1.47	pCi/L		111	(75%-125%)		05/24/1207:49	
		Uncert:		+/-0.722							
		TPU:		+/-0.733							
QC1202656706	303859001	MSD									
Alpha		241	U	0.746	pCi/L	0.296	103	(0-1)		05/25/1208:15	

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 5 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow										
Batch	1212200									
		Uncert:	+/-0.543							
		TPU:	+/-0.547							
Beta	1000	U	1.47	1130	pCi/L	0.0276	112	(0-1)		05/24/1207:49
		Uncert:	+/-0.722							
		TPU:	+/-0.733							

Notes:

The Qualifiers in this report are defined as follows:

**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
A	The TIC is a suspected aldol-condensation product
B	For General Chemistry and Organic analysis the target analyte was detected in the associated blank.
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
E	General Chemistry--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
E	Organics--Concentration of the target analyte exceeds the instrument calibration range
F	Estimated Value
FB	Mercury was found present at quantifiable concentrations in field blanks received with these samples. Data associated with the blank are deemed invalid for reporting to regulatory agencies
H	Analytical holding time was exceeded
J	Value is estimated
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.
M	M if above MDC and less than LLD
M	Matrix Related Failure
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	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
P	Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, difference is also <70%
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
R	Sample results are rejected
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
UI	Gamma Spectroscopy--Uncertain identification
UJ	Gamma Spectroscopy--Uncertain identification
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.

GEL LABORATORIES LLC

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

QC Summary

Workorder: 303489

Page 6 of 6

Parmname	NOM	Sample Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
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.									
^	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									
h	Preparation or preservation holding time was exceeded									

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

** Indicates analyte is a surrogate compound.

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

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

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