

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4238 EVENT NAME: LA/Pueblo (TA-21 and General Surveillance Monitoring Group)
Q3 MY2013 Sampling
Event_Pueblo

SAMPLE ID: CAPU-13-34775 WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
DATE COLLECTED (MM/DD/YYYY):		06/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1145	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-2		↓	FIELD PREP:	UF	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE:	REG	↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE:	INV	↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-GrossA/B	1 LITER POLY	1	NONE	Y	NA
↓	WSP-RAD	1 GAL POLY	1	HNO3	↓	↓
↓	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

Sampled within 50' of running diesel generator.

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

Dissolved Oxygen 5.17 mg/L Oxidation-Reduction Potential 115.7 MV pH 7.38 SU
Specific Conductance 143 uS/cm Temperature 24.92 deg C Turbidity 0.94 NTU

COLLECTED BY (PRINT) J. Jordan

RELINQUISHED BY (Printed Name) David Fellenz (Signature) <i>David Fellenz</i>	Date/Time 6/12/13 1245	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>Sheri Sherwood</i>	Date/Time 6/12/13 1245
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/29/2013

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 4238

EVENT NAME:

LA/Pueblo (TA-21 and General
Surveillance Monitoring Group)
Q3 MY2013 Sampling
Event_Pueblo

SAMPLE ID: CAPU-13-34783

WORK ORDER: NA

	<u>AS PLANNED</u>	<u>AS COLLECTED</u>		<u>AS PLANNED</u>	<u>AS COLLECTED</u>
DATE COLLECTED (MM/DD/YYYY):		06/12/2013	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):		1145	MEDIA:	UA	↓
PRS ID:		OK	SAMPLE TECH CODE:	UA	GSP
LOCATION ID: R-2		↓	FIELD PREP:	F	OK
LOCATION TYPE: MON		↓	FIELD QC TYPE: REG		↓
PORT: SINGLE COMPLETION		↓	SAMPLE USAGE: INV		↓

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-CL04	250 ML POLY	1	ICE	Y	NA
↓	WSP-GENINORG	1 LITER POLY	1	ICE	↓	↓
↓	WSP-Met+B+SN+SR+U	1 LITER POLY	1	HNO3	↓	↓
↓	WSP-NH3+NO3/NO2+PO4	500 ML AMBER GLASS	1	H2SO4	↓	↓

SAMPLE COMMENTS:

NA

LOCATION COMMENTS:

NA

FIELD PARAMETERS:

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

COLLECTED BY (PRINT) W. Shan

RELINQUISHED BY (Printed Name) David Fellner (Signature) <i>[Signature]</i>	Date/Time 6/12/13 1245	RECEIVED BY (Printed Name) S. Heywood (Signature) <i>[Signature]</i>	Date/Time 6/12/13 1245
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date 05/29/2013

Data Validation Report

Chain Of Custody No. 2013-952

1. Distribution Of Samples In EDD.

	Analytical	Regular	Field	Trip	Field	Equipment
SDG	Method	Samples	Duplicates	Blanks	Blanks	Blanks
327623	EPA:120.1	1				
327623	EPA:150.1	1				
327623	EPA:160.1	1				
327623	EPA:245.2	1				
327623	EPA:300.0	1				
327623	EPA:310.1	1				
327623	EPA:350.1	1				
327623	EPA:351.2	1				
327623	EPA:353.2	1				
327623	EPA:365.4	1				
327623	EPA:900	1				
327623	EPA:901.1	1				
327623	EPA:905.0	1				
327623	HASL-300:AM-241	1				
327623	HASL-300:ISOPU	1				
327623	HASL-300:ISOU	1				
327623	SM:A2340B	1				
327623	SW-846:6010B	1				
327623	SW-846:6020	1				
327623	SW-846:6850	1				
327623	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
327623	EPA:120.1	1311655	1311655	1							
327623	EPA:150.1	1308135	1308135	1							
327623	EPA:160.1	1308070	1308070	1						1	
327623	EPA:245.2	1311681	1311670	1						1	2
327623	EPA:300.0	1307985	1307985	1						1	
327623	EPA:310.1	1310342	1310342	1						2	1
327623	EPA:350.1	1308128	1308126	1						1	1
327623	EPA:351.2	1308288	1308287	1						1	2
327623	EPA:353.2	1308998	1308998	1						1	
327623	EPA:365.4	1308132	1308131	1						1	1
327623	EPA:900	1308529	1308529	1						1	1
327623	EPA:901.1	1307967	1307967	1						1	
327623	EPA:905.0	1308549	1308549	1						1	1
327623	HASL-300:AM-241	1307462	1307462	1						1	
327623	HASL-300:ISOPU	1307464	1307464	1						1	
327623	HASL-300:ISOU	1307467	1307467	1						1	
327623	SM:A2340B	1313406	1313406	1							
327623	SW-846:6010B	1308250	1308249	1						1	1
327623	SW-846:6020	1308248	1308247	1						1	1
327623	SW-846:6850	1308476	1308475	1						1	1
327623	SW-846:9060	1309042	1309042	1						1	

2. Distribution Of Analytes In EDD.

[illegible]

Analytical Method	Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spikes	TICS
EPA:120.1	GENERAL CHEMISTRY	CALA-13-33431	1202901423	DUP	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:120.1	GENERAL CHEMISTRY	LCS	1202901425	LCS	0	0	1	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-13-34783	1202892561	DUP	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:150.1	GENERAL CHEMISTRY	LCS	1202892559	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	CALA-13-33435	1202892385	DUP	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:160.1	GENERAL CHEMISTRY	LCS	1202892380	LCS	0	0	1	0
EPA:160.1	GENERAL CHEMISTRY	MB	1202892376	MB	1	0	0	0
EPA:245.2	INORGANIC	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:245.2	INORGANIC	LCS	1202901487	LCS	0	0	1	0
EPA:245.2	INORGANIC	MB	1202901486	MB	1	0	0	0
EPA:245.2	INORGANIC	WST59-13-36938	1202901488	DUP	1	0	0	0
EPA:245.2	INORGANIC	WST59-13-36938	1202901489	MS	0	0	1	0
EPA:245.2	INORGANIC	WTLAP-13-31087	1202901491	DUP	1	0	0	0
EPA:245.2	INORGANIC	WTLAP-13-31087	1202901492	MS	0	0	1	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	CAPU-13-34785	1202892154	DUP	4	0	0	0
EPA:300.0	GENERAL CHEMISTRY	LCS	1202892156	LCS	0	0	4	0
EPA:300.0	GENERAL CHEMISTRY	MB	1202892153	MB	4	0	0	0
EPA:310.1	GENERAL CHEMISTRY	Buckman08-12-34755	1202898281	MS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	Buckman08-12-34755	1202898282	DUP	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202898279	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	LCS	1202898290	LCS	0	0	1	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202898278	MB	2	0	0	0
EPA:310.1	GENERAL CHEMISTRY	MB	1202898288	MB	2	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34781	1202892528	DUP	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34781	1202892530	MS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:350.1	GENERAL CHEMISTRY	LCS	1202892532	LCS	0	0	1	0
EPA:350.1	GENERAL CHEMISTRY	MB	1202892527	MB	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34773	1202892934	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34773	1202892936	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34775	327623001	REG	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34778	1202892935	DUP	1	0	0	0
EPA:351.2	GENERAL CHEMISTRY	CAPU-13-34778	1202892937	MS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	LCS	1202892938	LCS	0	0	1	0
EPA:351.2	GENERAL CHEMISTRY	MB	1202892933	MB	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CALA-13-33431	1202894792	DUP	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:353.2	GENERAL CHEMISTRY	LCS	1202894796	LCS	0	0	1	0
EPA:353.2	GENERAL CHEMISTRY	MB	1202894789	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	CAPU-13-34783	327623002	REG	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	LCS	1202892538	LCS	0	0	1	0
EPA:365.4	GENERAL CHEMISTRY	MB	1202892537	MB	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST35-13-31938	1202892539	DUP	1	0	0	0
EPA:365.4	GENERAL CHEMISTRY	WST35-13-31938	1202892540	MS	0	0	1	0
EPA:900	RAD	CAPU-13-34775	1202893585	DUP	2	0	0	0
EPA:900	RAD	CAPU-13-34775	1202893586	MS	0	0	2	0
EPA:900	RAD	CAPU-13-34775	1202893587	MSD	0	0	2	0
EPA:900	RAD	CAPU-13-34775	327623001	REG	2	0	0	0

EPA:900	RAD	LCS	1202893588	LCS	0	0	2	0
EPA:900	RAD	MB	1202893584	MB	2	0	0	0
EPA:901.1	RAD	CALA-13-33427	1202892111	DUP	5	0	0	0
EPA:901.1	RAD	CAPU-13-34775	327623001	REG	5	0	0	0
EPA:901.1	RAD	LCS	1202892112	LCS	0	0	3	0
EPA:901.1	RAD	MB	1202892110	MB	5	0	0	0
EPA:905.0	RAD	CALA-13-33423	1202893648	DUP	1	0	0	0
EPA:905.0	RAD	CALA-13-33423	1202893649	MS	0	0	1	0
EPA:905.0	RAD	CAPU-13-34775	327623001	REG	1	0	0	0
EPA:905.0	RAD	LCS	1202893650	LCS	0	0	1	0
EPA:905.0	RAD	MB	1202893647	MB	1	0	0	0
HASL-300:AM-241	RAD	CAPU-13-34775	327623001	REG	1	0	0	0
HASL-300:AM-241	RAD	CAPU-13-34777	1202890848	DUP	1	0	0	0
HASL-300:AM-241	RAD	LCS	1202890849	LCS	0	0	1	0
HASL-300:AM-241	RAD	MB	1202890847	MB	1	0	0	0
HASL-300:ISOPU	RAD	CAPU-13-34775	327623001	REG	2	0	0	0
HASL-300:ISOPU	RAD	CAPU-13-34777	1202890856	DUP	2	0	0	0
HASL-300:ISOPU	RAD	LCS	1202890857	LCS	0	0	1	0
HASL-300:ISOPU	RAD	MB	1202890855	MB	2	0	0	0
HASL-300:ISOU	RAD	CAPU-13-34775	327623001	REG	3	0	0	0
HASL-300:ISOU	RAD	CAPU-13-34777	1202890864	DUP	3	0	0	0
HASL-300:ISOU	RAD	LCS	1202890865	LCS	0	0	1	0
HASL-300:ISOU	RAD	MB	1202890863	MB	3	0	0	0
SM:A2340B	INORGANIC	CAPU-13-34783	327623002	REG	1	0	0	0
SW-846:6010B	INORGANIC	CAPU-13-34783	327623002	REG	17	0	0	0
SW-846:6010B	INORGANIC	LCS	1202892845	LCS	0	0	17	0
SW-846:6010B	INORGANIC	MB	1202892844	MB	17	0	0	0
SW-846:6010B	INORGANIC	WST35-13-31938	1202892846	DUP	17	0	0	0
SW-846:6010B	INORGANIC	WST35-13-31938	1202892847	MS	0	0	17	0
SW-846:6020	INORGANIC	CAPU-13-34783	327623002	REG	11	0	0	0
SW-846:6020	INORGANIC	LCS	1202892840	LCS	0	0	11	0
SW-846:6020	INORGANIC	MB	1202892839	MB	11	0	0	0
SW-846:6020	INORGANIC	WST35-13-31938	1202892841	DUP	11	0	0	0
SW-846:6020	INORGANIC	WST35-13-31938	1202892842	MS	0	0	11	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34783	1202893409	MS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34783	1202893410	MSD	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	CAPU-13-34783	327623002	REG	1	0	0	0
SW-846:6850	LCMS/MS PERCHLORATE	LCS	1202893408	LCS	0	0	1	0
SW-846:6850	LCMS/MS PERCHLORATE	MB	1202893407	MB	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-13-34775	1202894930	DUP	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	CAPU-13-34775	327623001	REG	1	0	0	0
SW-846:9060	GENERAL CHEMISTRY	LCS	1202894932	LCS	0	0	1	0
SW-846:9060	GENERAL CHEMISTRY	MB	1202894929	MB	1	0	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

Field	Lab	Type Of	Analytical	Sample	Parameter	Lab	Lab		Lab
Sample ID	Sample ID	Blank	Method	Matrix	Name	Result	Qualifier	Units	Detection Limit
MB	1202892376	METHOD BLANK	EPA:160.1	W	Total Dissolved Solids	7.14	J	mg/L	14.3
MB	1202892844	METHOD BLANK	SW-846:6010B	W	Sodium	204	J	ug/L	300
MB	1202901486	METHOD BLANK	EPA:245.2	W	Mercury	-0.076	J	ug/L	0.2

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
CAPU-13-34783	MB	1202901486	METHOD BLANK	EPA:245.2	Mercury	ug/L	-0.076	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
WST35-13-31938	1202892540		EPA:365.4	Total Phosphate as Phosphorus	1308131	6/18/2013	W	5660		139	62
CAPU-13-34775	1202893586	1202893587	EPA:900	Gross alpha	1308529	6/26/2013	W	94.2	109	125	75
CAPU-13-34775	1202893586	1202893587	EPA:900	Gross alpha	1308529	6/26/2013	W	94.2	109	125	75
WST35-13-31938	1202892847		SW-846:6010B	Aluminum	1308249	6/24/2013	W	-1.17		125	75
WST35-13-31938	1202892847		SW-846:6010B	Barium	1308249	6/24/2013	W	0.7		125	75
WST35-13-31938	1202892847		SW-846:6010B	Beryllium	1308249	6/24/2013	W	62.4		125	75
WST35-13-31938	1202892847		SW-846:6010B	Calcium	1308249	6/24/2013	W	-0.982		125	75
WST35-13-31938	1202892847		SW-846:6010B	Copper	1308249	6/24/2013	W	65.2		125	75
WST35-13-31938	1202892847		SW-846:6010B	Iron	1308249	6/24/2013	W	-0.446		125	75
WST35-13-31938	1202892847		SW-846:6010B	Magnesium	1308249	6/24/2013	W	-0.825		125	75
WST35-13-31938	1202892847		SW-846:6010B	Manganese	1308249	6/24/2013	W	44		125	75
WST35-13-31938	1202892847		SW-846:6010B	Potassium	1308249	6/25/2013	W	163		125	75
WST35-13-31938	1202892847		SW-846:6010B	Silicon Dioxide	1308249	6/25/2013	W	-282		125	75
WST35-13-31938	1202892847		SW-846:6010B	Sodium	1308249	6/25/2013	W	6600		125	75
WST35-13-31938	1202892847		SW-846:6010B	Strontium	1308249	6/24/2013	W	-0.0579		125	75
WST35-13-31938	1202892847		SW-846:6010B	Tin	1308249	6/24/2013	W	58.9		125	75
WST35-13-31938	1202892847		SW-846:6010B	Vanadium	1308249	6/24/2013	W	19.2		125	75
WST35-13-31938	1202892847		SW-846:6010B	Zinc	1308249	6/24/2013	W	72.2		125	75
WST35-13-31938	1202892842		SW-846:6020	Cadmium	1308247	6/26/2013	W	73.5		125	75
WST35-13-31938	1202892842		SW-846:6020	Chromium	1308247	6/25/2013	W	7.99		125	75
WST35-13-31938	1202892842		SW-846:6020	Lead	1308247	6/26/2013	W	30		125	75
WST35-13-31938	1202892842		SW-846:6020	Molybdenum	1308247	6/25/2013	W	69.8		125	75
WST35-13-31938	1202892842		SW-846:6020	Nickel	1308247	6/25/2013	W	134		125	75
WST35-13-31938	1202892842		SW-846:6020	Selenium	1308247	6/27/2013	W	-47.4		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.

Chain Of Custody No. 2013-952

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

[illegible]

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
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	HASL-300:AM-241	Americium-241	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:901.1	Cesium-137	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:901.1	Cobalt-60	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:900	Gross alpha	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:900	Gross beta	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:901.1	Neptunium-237	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-238	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	HASL-300:ISOPU	Plutonium-239/240	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:901.1	Potassium-40	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:901.1	Sodium-22	U	U	R5	N
R-2	2013-952	CAPU-13-34775	REG	INIT	RAD	EPA:905.0	Strontium-90	U	U	R5	N
R-2	2013-952	CAPU-13-34775	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
CAPU-13-34775	R-2	REG	EPA:351.2	0	1
CAPU-13-34775	R-2	REG	EPA:900	0	2
CAPU-13-34775	R-2	REG	EPA:901.1	0	5
CAPU-13-34775	R-2	REG	EPA:905.0	0	1
CAPU-13-34775	R-2	REG	HASL-300:AM-241	0	1
CAPU-13-34775	R-2	REG	HASL-300:ISOPU	0	2
CAPU-13-34775	R-2	REG	HASL-300:ISOU	0	3
CAPU-13-34775	R-2	REG	SW-846:9060	0	1
CAPU-13-34783	R-2	REG	EPA:120.1	0	1
CAPU-13-34783	R-2	REG	EPA:150.1	0	1
CAPU-13-34783	R-2	REG	EPA:160.1	0	1
CAPU-13-34783	R-2	REG	EPA:245.2	0	1
CAPU-13-34783	R-2	REG	EPA:300.0	0	4
CAPU-13-34783	R-2	REG	EPA:310.1	0	2

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
0.00286	pCi/L	0.00286	pCi/L	0.0435	0.00496	W	6/12/2013		1307462	VAL	Y
-0.13	pCi/L	-0.13	pCi/L	3.26	0.923	W	6/12/2013		1307967	VAL	Y
-0.487	pCi/L	-0.487	pCi/L	3.53	0.999	W	6/12/2013		1307967	VAL	Y
-0.0322	pCi/L	-0.0322	pCi/L	2.31	0.464	W	6/12/2013		1308529	VAL	Y
0.373	pCi/L	0.373	pCi/L	2.72	0.753	W	6/12/2013		1308529	VAL	Y
0.0615	pCi/L	0.0615	pCi/L	6.58	1.93	W	6/12/2013		1307967	VAL	Y
0	pCi/L	0	pCi/L	0.0255	0.00385	W	6/12/2013		1307464	VAL	Y
-0.00272	pCi/L	-0.00272	pCi/L	0.0536	0.00609	W	6/12/2013		1307464	VAL	Y
7.26	pCi/L	7.26	pCi/L	46.3	12.6	W	6/12/2013		1307967	VAL	Y
-0.915	pCi/L	-0.915	pCi/L	3.05	0.883	W	6/12/2013		1307967	VAL	Y
0.142	pCi/L	0.142	pCi/L	0.493	0.145	W	6/12/2013		1308549	VAL	Y
0.00982	pCi/L	0.00982	pCi/L	0.0453	0.00866	W	6/12/2013		1307467	VAL	Y

CAPU-13-34783	R-2	REG	EPA:350.1	0	1
CAPU-13-34783	R-2	REG	EPA:353.2	0	1
CAPU-13-34783	R-2	REG	EPA:365.4	0	1
CAPU-13-34783	R-2	REG	SM:A2340B	0	1
CAPU-13-34783	R-2	REG	SW-846:6010B	0	17
CAPU-13-34783	R-2	REG	SW-846:6020	0	11
CAPU-13-34783	R-2	REG	SW-846:6850	0	1



July 11, 2013

www.gel.com

Mr. 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: 327623
SDG: 2013-952

Dear Mr. Greene:

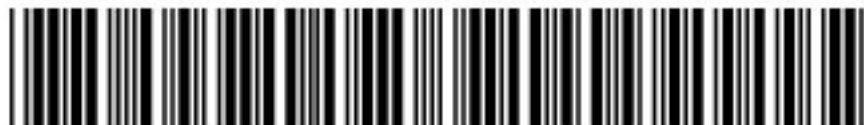
GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 14, 2013, and analyzed for General Chemistry, Metals, Perchlorates by LCMSMS and Radiochemistry. This original data report has been prepared and reviewed in accordance 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: 2013-952
Enclosures



ARS International (63641-10)
LANL-WQH Water Samples
Work Order #: 327623
SDG: 2013-952

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Case Narrative

**Case Narrative for
ARS International (63641-10)
LANL-WQH Water Samples
Workorder #: 327623
SDG # : 2013-952**

July 11, 2013

Laboratory Identification:

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

Summary

Sample receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on June 14, 2013 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. 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>
327623001	CAPU-13-34775
327623002	CAPU-13-34783

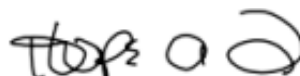
Case Narrative

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: 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 11 July 2013

State	Certification
Alaska	UST-110
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	P330-12-00283, P330-12-00284
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	LA130005
Maryland	270
Massachusetts	M-SC012
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
Plant Material Permit	PDEP-12-00260
South Carolina Chemistry	10120001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235-13-8
Utah NELAP	SC000122013-8
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

Chain of Custody and Supporting Documentation

t 327623 8
~~327923~~

COC/Lab Request #: 2013-952

Lab Agreement # : 125310011	
Project Number :	
Analysis Turnaround Time:	
24 Hour -	<input type="checkbox"/> Other - <input type="checkbox"/>
7 Day -	<input type="checkbox"/>
14 Day -	<input type="checkbox"/>
21 Day -	<input type="checkbox"/>
28 Day -	<input checked="" type="checkbox"/>

Site Name: Los Alamos National Laboratory

Project Number :	Analysis Turnaround Time:				
	24 Hour -	<input type="checkbox"/>	Other -	<input type="checkbox"/>	
	7 Day -	<input type="checkbox"/>			
	14 Day -	<input type="checkbox"/>			
	21 Day -	<input type="checkbox"/>			
	28 Day -	<input checked="" type="checkbox"/>			

Rad Screening Info:	Yes, Below Background
Lab Reporting Limit Type:	
Special Instructions:	

[illegible]

Special Instructions:

Relinquished by:	S. Sherwood	Date/Time:	6/13/13	Received by:	P. Hunt	Print Name:	Patricia Dent	Date/Time:	6-14-13 0850
Relinquished by:		Date/Time:		Received by:		Print Name:		Date/Time:	
Relinquished by:		Date/Time:		Received by:		Print Name:		Date/Time:	

SAMPLE RECEIPT & REVIEW FORM

Client: LANL			SDG/AR/COC/Work Order: 2013-952		
Received By: Patricia Dent			Date Received: JUN 14, 2013		
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): 0CPM	
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) *all temperatures are recorded in Celsius 2,3C
2a	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 61524649
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: CAPU-13-34775 for Gross A/B If Preservation added, Lot#: NX 0409-72
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:
12	Are sample containers identifiable as GEL provided?			X	Clients
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 5462 9833 0940 2C 5462 9833 0939 3C

Comments (Use Continuation Form if needed):

Subject: Sample receipt issues from 06/14/13
From: Pat Dent <Pat.Dent@gel.com>
Date: 6/14/2013 6:10 PM
To: "Keith R. Greene" <kgreene@lanl.gov>
CC: "team.davis" <team.davis@gel.com>

Good Evening all listed below are today's issues

Containers received for Gross A/B was preserved prior to analysis

RN#2013-951

CALA-13-33416 the lab received 1 container for 8260b the chain indicates 2.

RN#2013-953

WST35-13-31938 all containers received was unpreserve, please advise.
The chain indicates 6 containers the lab received 5.

Thanks!!

--

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

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 13JUN13
ACTWGT: 43.0 LB MAN
CAD: 0014176/CAFE2511

BILL SENDER

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

CHARLESTON SC 29407

(843) 556-8171
REF: WE991158W100

2C



FedEx
Express



580C1/0777/188C
J1113118660125

2 of 2
MPS# 5462 9833 0940
0263
Mstr# 5462 9833 0939

FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT

0201

XX CHSA

29407
SC-US CHS

Part # 155145-434 FIT2 08/10



NPDES

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

LOS ALAMOS, NM 87545
UNITED STATES US

SHIP DATE: 13JUN13
ACTWGT: 58.0 LB MAN
CAD: 0014176/CAFE2511

BILL SENDER

TO VALERIE DAVIS
GENERAL ENGINEERING LAB
2040 SAVAGE RD

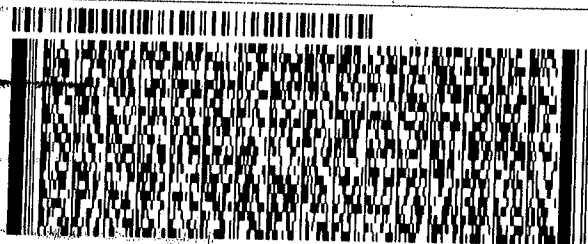
CHARLESTON SC 29407

(843) 556-8171

REF: WE991158W100

3e

540C1/0777/188C



FedEx
Express



J31131106060125

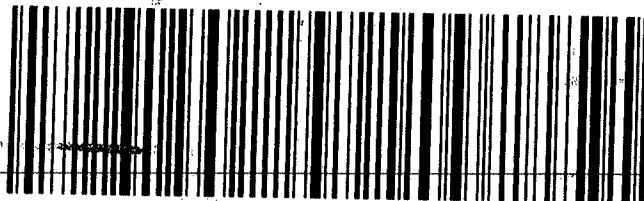
1 of 2
TRK# 5462 9833 0939
0201
HH MASTER HH

FRI - 14 JUN 10:30A
PRIORITY OVERNIGHT

XX CHSA

29407
SC-US CHS

Part 8 155140-434 RIT2 08/10



Data Review Qualifier Flag Definition Sheet

Data Review Qualifier Definitions

Qualifier	Explanation
-----------	-------------

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

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

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

Perchlorates by LCMSMS Analysis

Case Narrative

**Perchlorate by LC-MS/MS
ARS International (ARSL)
SDG 2013-952**

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: 1308476

Prep Batch Number: 1308475

Sample Analysis

Sample ID	Client ID
327623002	CAPU-13-34783
1202893411	Interference Check Sample (ICS)
1202893407	Method Blank (MB)
1202893408	Laboratory Control Sample (LCS)
1202893409	327623002(CAPU-13-34783) Matrix Spike (MS)
1202893410	327623002(CAPU-13-34783) 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# 10.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this SDG.

Due to software constraints, all Initial Calibration Blanks must be designated as IPB001.

ICV Requirements

The initial calibration verification standard (ICV) met the acceptance criteria.

CCB Requirements

All continuing calibration blanks (CCB) bracketing the analyses associated with this batch were within acceptance criteria.

CCV Requirements

All continuing calibration checks (CCV) requirements were met by all bracketing CCV standards.

Low Level Standard (CRI) Requirements

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

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

The MB analyzed with this SDG met the acceptance criteria.

Interference Check Sample (ICS)

The ICS met all recovery acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Client sample 327623002 (CAPU-13-34783) was chosen for matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPDs between the MS and MSD met the acceptance limits.

Retention Time Standard Area Acceptance

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

Retention Time

During the analysis of Perchlorate by LC/MS/MS, retention time shifts are commonly observed. These retention time shifts, which are caused by fouling of the column by the sample matrices, are problematic when the retention time is used as one of the criterion for confirmation. To overcome this problem, a known amount of O(18) labeled Perchlorate was added to each sample as a retention time standard.

The presence of Perchlorate was confirmed by the relative retention time (RRT) of the Perchlorate peak and the O(18) standard. A RRT window of 0.98 to 1.02, as required by Method 332.0, has been used.

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

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

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

Manual Integrations

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

Method Comments

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

Additional Comments

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

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

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

Perchlorate Isotope Ratio

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

Please see the isotope ratio criteria in the Miscellaneous Section.

System Configuration

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

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

Electronic Packaging Comment

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

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

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

Chromatographic Columns

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

Dionex: IonPac AG-16 2 x 50 mm.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 2013-952 GEL Work Order: 327623

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: 

Name: Michael Penny

Date: 02 JUL 2013

Title: Group Leader

Sample Data Summary

Perchlorate Analysis Data Sheet

Lab Name: GEL Laboratories LLCLab Code: GELInstrument: LCMSMSMethod: SW846 6850 ModifiedMatrix: WATERExtraction Batch ID: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-13-34783Date Received: 14-JUN-13GEL Job No (SDG): 2013-952GEL Sample ID: 327623002Date Filtered: 19-JUN-13Injection 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	0.338	ug/L		1	19-JUN-13 14:21	per0619017a
	Perchlorate Isotope Ratio			3.1			1	19-JUN-13 14:21	per0619017a
14797-73-0	Perchlorate-101	.05	.2	0.336	ug/L		1	19-JUN-13 14:21	per0619017a
	Perchlorate-O(18)			0.475	ug/L		1	19-JUN-13 14:21	per0619017a

^ 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): 2013-952

Extract Batch Code: 1308475

Date Filtered: 19-JUN-13

Matrix: WATER

Sample ID: 1202893408

Analyte^	True	Found	Units	%Rec	Q	Control Limits
Perchlorate	0.200	.188	ug/L	94.1		85 - 115
Perchlorate Isotope Ratio		3.08				-
Perchlorate-101	0.200	.188	ug/L	94.2		85 - 115
Perchlorate-O(18)		.494	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): 2013-952

Extract Batch Code: 1308475

Date Extracted: 19-JUN-13

GEL MS/PS ID: 1202893409

Client ID: CAPU-13-34783

GEL MSD/PSD ID: 1202893410

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	0.338	ug/L	0.516	89.3	.528	95.4	2.33	30	75 - 125
Perchlorate Isotope Ratio	0	3.10		3.14		3.1		.995		-
Perchlorate-101	0.200	0.336	ug/L	0.508	85.8	.525	94.4	3.32	30	75 - 125
Perchlorate-O(18)	0	0.475	ug/L	0.471		.479		1.7		-

^ 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: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

MBDate Received: 19-JUN-13GEL Job No (SDG): 2013-952GEL Sample ID: 1202893407Date Filtered: 19-JUN-13Injection Volume (uL): 20%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L	U	1	19-JUN-13 13:41	per0619012a
	Perchlorate Isotope Ratio						1	19-JUN-13 13:41	per0619012a
14797-73-0	Perchlorate-101	.05	.2	0.200	ug/L	U	1	19-JUN-13 13:41	per0619012a
	Perchlorate-O(18)			0.484	ug/L		1	19-JUN-13 13:41	per0619012a

^ 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: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

LCSDate Received: 19-JUN-13GEL Job No (SDG): 2013-952GEL Sample ID: 1202893408Date Filtered: 19-JUN-13Injection 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	0.188	ug/L	J	1	19-JUN-13 13:49	per0619013a
	Perchlorate Isotope Ratio			3.08			1	19-JUN-13 13:49	per0619013a
14797-73-0	Perchlorate-101	.05	.2	0.188	ug/L	J	1	19-JUN-13 13:49	per0619013a
	Perchlorate-O(18)			0.494	ug/L		1	19-JUN-13 13:49	per0619013a

^ 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: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

ICS

Date Received:

GEL Job No (SDG): 2013-952GEL Sample ID: 1202893411Date Filtered: 19-JUN-13Injection Volume (uL): 20

%Solids:

CAS No.	Analyte^	MDL	RL	Conc*	Units	Q	Dilution Factor	Date Analyzed	GEL File ID
14797-73-0	Perchlorate	.05	.2	0.200	ug/L		1	19-JUN-13 13:57	per0619014a
	Perchlorate Isotope Ratio			3.04			1	19-JUN-13 13:57	per0619014a
14797-73-0	Perchlorate-101	.05	.2	0.203	ug/L		1	19-JUN-13 13:57	per0619014a
	Perchlorate-O(18)			0.515	ug/L		1	19-JUN-13 13:57	per0619014a

^ 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: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-13-34783MSDate Received: 14-JUN-13GEL Job No (SDG): 2013-952GEL Sample ID: 1202893409Date Filtered: 19-JUN-13Injection 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	0.516	ug/L		1	19-JUN-13 14:29	per0619018a
	Perchlorate Isotope Ratio			3.14			1	19-JUN-13 14:29	per0619018a
14797-73-0	Perchlorate-101	.05	.2	0.508	ug/L		1	19-JUN-13 14:29	per0619018a
	Perchlorate-O(18)			0.471	ug/L		1	19-JUN-13 14:29	per0619018a

^ 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: 1308475Extraction Type: Filter/DAISample Volume/Weight: 10.0 mLConcentrated Extract Volume: 10.0

Client Sample No.

CAPU-13-34783MSDDate Received: 14-JUN-13GEL Job No (SDG): 2013-952GEL Sample ID: 1202893410Date Filtered: 19-JUN-13Injection 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	0.528	ug/L		1	19-JUN-13 14:37	per0619019a
	Perchlorate Isotope Ratio			3.1			1	19-JUN-13 14:37	per0619019a
14797-73-0	Perchlorate-101	.05	.2	0.525	ug/L		1	19-JUN-13 14:37	per0619019a
	Perchlorate-O(18)			0.479	ug/L		1	19-JUN-13 14:37	per0619019a

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

*Concentration =

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

Metals Analysis

Case Narrative

**Metals Fractional Narrative
ARS International (ARSL)
SDG 2013-952**

Sample Analysis

Sample ID	Client ID
327623002	CAPU-13-34783
1202892844	Method Blank (MB) ICP
1202892845	Laboratory Control Sample (LCS)
1202892848	327626001(WST35-13-31938L) Serial Dilution (SD)
1202892846	327626001(WST35-13-31938D) Sample Duplicate (DUP)
1202892847	327626001(WST35-13-31938S) Matrix Spike (MS)
1202892839	Method Blank (MB) ICP-MS
1202892840	Laboratory Control Sample (LCS)
1202892843	327626001(WST35-13-31938L) Serial Dilution (SD)
1202892841	327626001(WST35-13-31938D) Sample Duplicate (DUP)
1202892842	327626001(WST35-13-31938S) Matrix Spike (MS)
1202901486	Method Blank (MB) CVAA
1202901487	Laboratory Control Sample (LCS)
1202901493	327940001(WTLAP-13-31087L) Serial Dilution (SD)
1202901491	327940001(WTLAP-13-31087D) Sample Duplicate (DUP)
1202901492	327940001(WTLAP-13-31087S) Matrix Spike (MS)

Method/Analysis Information

Analytical Batch:	1308250, 1308248, 1311681 and 1313406
Prep Batch :	1308249, 1308247 and 1311670
Standard Operating Procedures:	GL-MA-E-013 REV# 22, GL-MA-E-006 REV# 9, GL-MA-E-014 REV# 25, GL-MA-E-010 REV# 26 and GL-GC-E-107 REV# 8
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-ICP was performed on a PE 7300 Optima radial/axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Burgener nebulizer, cyclonic spray chamber, and yttrium or scandium internal standard. Operating conditions for the ICP are set at a power level of 1500 watts. The instrument has a peristaltic pump flow rate of 1.4L/min, argon gas flows of 15 L/min and 0.2 L/min for the torch and auxiliary gases, and a flow setting of 0.65L/min for the nebulizer.

The Metals analysis - ICPMS was performed on a Perkin Elmer ELAN 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 standards met the advisory control limits with the exception of mercury, which recovered outside of the advisory limits of 70-130%.

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: 327626001 (WST35-13-31938)-ICP and ICP-MS and 327940001 (WTLAP-13-31087)-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. The MS met the recommended quality control acceptance criteria for percent recoveries for all applicable analytes with the exception of cadmium, chromium, lead, molybdenum, selenium, aluminum, barium, beryllium, calcium, iron, magnesium, manganese, strontium, tin, vanadium, and zinc.

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 25x the IDL/MDL for CVAA, 50X the IDL/MDL for ICP and 100X the IDL/MDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established criteria of less than 10% difference (%D) with the exception of molybdenum, nickel, and tin.

Technical Information

Holding Time Specifications

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

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The samples in this SDG did not require dilutions.

Preparation Information

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

Miscellaneous Information

Electronic Packaging Comment

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

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

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DERs were generated for this SDG: 1199319 and 1200315. A copy of each DER is included in the

Miscellaneous Data section of this package.

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.

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

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

Certification Statement

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

Review Validation:

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

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

Reviewer: _____



Date: _____

07/10/13

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: 2013-952 GEL Work Order: 327623

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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

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

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

Reviewed by



07/10/13

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-952**CONTRACT:** ESHL00210**METHOD TYPE:** EPA**SAMPLE ID:** 327623002**BASIS:** As Received**DATE COLLECTED** 12-JUN-13**CLIENT ID:** CAPU-13-34783**LEVEL:** Low**DATE RECEIVED** 14-JUN-13**MATRIX:** W**%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7439-97-6	Mercury	0.20	ug/L	U	0.067	0.2	0.2	1	AV	NOR1	07/02/13 10:48	070213W1-8	1311681

METALS
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INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-952

CONTRACT: ESHL00210

METHOD TYPE: SW846

SAMPLE ID: 327623002

BASIS: As Received

DATE COLLECTED 12-JUN-13

CLIENT ID: CAPU-13-34783

LEVEL: Low

DATE RECEIVED 14-JUN-13

MATRIX: W

%SOLIDS: 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429-90-5	Aluminum	200	ug/L	U	68	200	200	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-36-0	Antimony	3	ug/L	U	1	3	3	1	MS	PRB	07/01/13 18:58	130701-7	1308248
7440-38-2	Arsenic	5	ug/L	U	1.7	5	5	1	MS	BAJ	06/26/13 09:28	130625-5	1308248
7440-39-3	Barium	14.8	ug/L		1	5	5	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-41-7	Beryllium	5	ug/L	U	1	5	5	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-42-8	Boron	50	ug/L	U	15	50	50	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-43-9	Cadmium	1	ug/L	U	0.11	1	1	1	MS	BAJ	06/26/13 09:28	130625-5	1308248
7440-70-2	Calcium	11800	ug/L		50	200	200	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-47-3	Chromium	3.8	ug/L	J	2	10	10	1	MS	BAJ	06/25/13 04:41	130624-4	1308248
7440-48-4	Cobalt	5	ug/L	U	1	5	5	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-50-8	Copper	5.09	ug/L	J	3	10	10	1	P	HSC	06/24/13 15:05	062413C-1	1308250
7439-89-6	Iron	100	ug/L	U	30	100	100	1	P	HSC	06/24/13 10:13	062413-3	1308250
7439-92-1	Lead	2	ug/L	U	0.5	2	2	1	MS	BAJ	06/26/13 09:28	130625-5	1308248
7439-95-4	Magnesium	3300	ug/L		110	300	300	1	P	HSC	06/24/13 10:13	062413-3	1308250
7439-96-5	Manganese	9.82	ug/L	J	2	10	10	1	P	HSC	06/24/13 10:13	062413-3	1308250
7439-98-7	Molybdenum	1.89	ug/L		0.165	0.5	0.5	1	MS	BAJ	06/25/13 04:41	130624-4	1308248
7440-02-0	Nickel	1.17	ug/L	J	0.5	2	2	1	MS	BAJ	06/25/13 04:41	130624-4	1308248
7440-09-7	Potassium	999	ug/L		50	150	150	1	P	HSC	06/25/13 16:47	062513A-2	1308250
7782-49-2	Selenium	5	ug/L	U	1.5	5	5	1	MS	BAJ	06/27/13 00:06	130626-6	1308248
7631-86-9	Silica	85700	ug/L		53	213	213	1	P	HSC	06/25/13 16:47	062513A-2	1308250
7440-22-4	Silver	1	ug/L	U	0.2	1	1	1	MS	BAJ	06/25/13 04:41	130624-4	1308248
7440-23-5	Sodium	13300	ug/L		100	300	300	1	P	HSC	06/25/13 16:47	062513A-2	1308250
7440-24-6	Strontium	56.1	ug/L		1	5	5	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-28-0	Thallium	2	ug/L	U	0.45	2	2	1	MS	BAJ	06/26/13 09:28	130625-5	1308248
7440-31-5	Tin	10	ug/L	U	2.5	10	10	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-61-1	Uranium	0.429	ug/L		0.067	0.2	0.2	1	MS	BAJ	06/26/13 09:28	130625-5	1308248
7440-62-2	Vanadium	8.31	ug/L		1	5	5	1	P	HSC	06/24/13 10:13	062413-3	1308250
7440-66-6	Zinc	11.7	ug/L		3.3	10	10	1	P	HSC	06/24/13 15:05	062413C-1	1308250

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: 2013-952**CONTRACT:** ESHL00210**METHOD TYPE:****SAMPLE ID:** 327623002 **BASIS:** As Received **DATE COLLECTED** 12-JUN-13**CLIENT ID:** CAPU-13-34783 **LEVEL:** Low **DATE RECEIVED** 14-JUN-13**MATRIX:** W **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
	Hardness as CaCO3	43	mg/L		0.453	1.24	1.24	1		AXH3	07/09/13 14:22		1313406

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1308248	1308247	SW846 3005A	50	mL	50	mL	06/21/13	MTM1
1308250	1308249	SW846 3005A	50	mL	50	mL	06/21/13	MTM1
1311681	1311670	EPA 245.1/245.2 Prep	20	mL	20	mL	07/01/13	AXS5

Analytical Methods:*MS** **SW846 3005/6020 DOE-AL****P** **SW846 3005/6010B****AV** **EPA 245.1/245.2**

Quality Control Summary

METALS
-3b-
PREPARATION BLANK SUMMARY

SDG NO. 2013-952
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>
1202892839	Antimony	1	ug/L	+/-3	U	MS	1	3
	Arsenic	1.7	ug/L	+/-5	U	MS	1.7	5
	Cadmium	0.11	ug/L	+/-1	U	MS	0.11	1
	Molybdenum	0.165	ug/L	+/-0.5	U	MS	0.165	0.5
	Nickel	0.5	ug/L	+/-2	U	MS	0.5	2
	Lead	0.5	ug/L	+/-2	U	MS	0.5	2
	Chromium	2	ug/L	+/-10	U	MS	2	10
	Selenium	1.5	ug/L	+/-5	U	MS	1.5	5
	Thallium	0.45	ug/L	+/-2	U	MS	0.45	2
	Uranium	0.067	ug/L	+/-0.2	U	MS	0.067	0.2
	Silver	0.2	ug/L	+/-1	U	MS	0.2	1
1202892844	Strontium	1	ug/L	+/-5	U	P	1	5
	Tin	2.5	ug/L	+/-10	U	P	2.5	10
	Aluminum	68	ug/L	+/-200	U	P	68	200
	Beryllium	1	ug/L	+/-5	U	P	1	5
	Calcium	50	ug/L	+/-200	U	P	50	200
	Copper	3	ug/L	+/-10	U	P	3	10
	Silica	53	ug/L	+/-213	U	P	53	213
	Potassium	50	ug/L	+/-150	U	P	50	150
	Manganese	2	ug/L	+/-10	U	P	2	10
	Magnesium	110	ug/L	+/-300	U	P	110	300
	Iron	30	ug/L	+/-100	U	P	30	100
	Cobalt	1	ug/L	+/-5	U	P	1	5
	Boron	15	ug/L	+/-50	U	P	15	50
	Barium	1	ug/L	+/-5	U	P	1	5
	Vanadium	1	ug/L	+/-5	U	P	1	5
	Sodium	204	ug/L	+/-300	J	P	100	300
	Zinc	3.3	ug/L	+/-10	U	P	3.3	10
1202901486	Mercury	-0.076	ug/L	+/-0.2	J	AV	0.067	0.2

***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. 2013-952

Client ID: WST35-13-31938S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 327626001

Spike ID: 1202892842

<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	91.6		49.7		50	83.7		MS
Arsenic	ug/L	75-125	116		64.1		50	104		MS
Cadmium	ug/L	75-125	36.8		2.75	U	50	73.5	N	MS
Chromium	ug/L	75-125	5.19	J	2	U	50	7.99	N	MS
Lead	ug/L	75-125	17.2		2.5	U	50	30	N	MS
Molybdenum	ug/L	75-125	138		103		50	69.8	N	MS
Nickel	ug/L		583		516		50	134	N/A	MS
Selenium	ug/L	75-125	75	U	75	U	50	0	N	MS
Silver	ug/L	75-125	45.4		2.66		50	85.5		MS
Thallium	ug/L	75-125	44.3		2.25	U	50	88.2		MS
Uranium	ug/L	75-125	58.7		8.33		50	101		MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

-5a-

Matrix Spike Summary

SDG NO. 2013-952

Client ID: WST35-13-31938S

Contract: ESHL00210

Level: Low

Matrix: WATER

% Solids:

Sample ID: 327626001

Spike ID: 1202892847

<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	68	U	68	U	5000	0	N	P
Barium	ug/L	75-125	4.52	J	1.03	J	500	.7	N	P
Beryllium	ug/L	75-125	312		1	U	500	62.4	N	P
Boron	ug/L	75-125	1090		659		500	86.9		P
Calcium	ug/L	75-125	50	U	50	U	5000	0	N	P
Cobalt	ug/L	75-125	399		14.9		500	76.9		P
Copper	ug/L		37600		37300		500	65.2	N/A	P
Iron	ug/L	75-125	53.1	J	75.4	J	5000	-446	N	P
Magnesium	ug/L	75-125	110	U	110	U	5000	0	N	P
Manganese	ug/L	75-125	304		84.3		500	44	N	P
Potassium	ug/L		85300		77100		5000	163	N/A	P
Silica	ug/L		1060000		1100000		10700	-282	N/A	P
Sodium	ug/L		10800000		10500000		5000	6600	N/A	P
Strontium	ug/L	75-125	1	U	1	U	500	0	N	P
Tin	ug/L	75-125	1110		813		500	58.9	N	P
Vanadium	ug/L	75-125	101		4.53	J	500	19.2	N	P
Zinc	ug/L	75-125	791		430		500	72.2	N	P

*Analytical Methods:

P SW846 3005/6010B

METALS

-5a-

Matrix Spike Summary

SDG NO. 2013-952 Client ID: WTLAP-13-31087S

Contract: ESHL00510 Level: Low

Matrix: STORM WATER % Solids:

Sample ID: 327940001 Spike ID: 1202901492

<u>Analyte</u>	<u>Units</u>	<u>Acceptance Limit</u>	<u>Spiked Result</u>	<u>C</u>	<u>Sample Result</u>	<u>C</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Qual</u>	<u>M*</u>
Mercury	ug/L	75-125	2.04		0.067	U	2	102		AV

*Analytical Methods:

AV EPA 245.1/245.2

Metals
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Duplicate Sample Summary

SDG No.: 2013-952

Lab Code: GEL

Contract: ESHL00210

Client ID: WST35-13-31938D

Matrix: LIQUID

Level: Low

Sample ID: 327626001

Duplicate ID: 1202892841

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Antimony	ug/L	+/-15	49.7		42.3		16		MS
Arsenic	ug/L	+/-25	64.1		69.8		8.48		MS
Cadmium	ug/L		2.75 U		2.75 U				MS
Chromium	ug/L		2 U		2 U				MS
Lead	ug/L		2.5 U		2.5 U				MS
Molybdenum	ug/L	+/-20%	103		89.7		13.6		MS
Nickel	ug/L	+/-20%	516		594		14		MS
Selenium	ug/L		75 U		75 U				MS
Silver	ug/L	+/-1	2.66		2.62		1.63		MS
Thallium	ug/L		2.25 U		2.25 U				MS
Uranium	ug/L	+/-20%	8.33		8.28		.542		MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

Metals
-6-
Duplicate Sample Summary

SDG No.: 2013-952

Lab Code: GEL

Contract: ESHL00210

Client ID: WST35-13-31938D

Matrix: LIQUID

Level: Low

Sample ID: 327626001

Duplicate ID: 1202892846

Percent Solids for Dup: N/A

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M*
Aluminum	ug/L		68 U		68 U				P
Barium	ug/L	+/-5	1.03 J		1.2 J		15.9		P
Beryllium	ug/L		1 U		1 U				P
Boron	ug/L	+/-20%	659		611		7.56		P
Calcium	ug/L		50 U		50 U				P
Cobalt	ug/L	+/-5	14.9		13		13		P
Copper	ug/L	+/-20%	37300		37700		1.06		P
Iron	ug/L	+/-100	75.4 J		73.4 J		2.74		P
Magnesium	ug/L		110 U		110 U				P
Manganese	ug/L	+/-20%	84.3		77.4		8.52		P
Potassium	ug/L	+/-20%	77100		79600		3.2		P
Silica	ug/L	+/-20%	1100000		1060000		3.64		P
Sodium	ug/L	+/-20%	10500000		10800000		3.29		P
Strontium	ug/L		1 U		1 U				P
Tin	ug/L	+/-20%	813		695		15.7		P
Vanadium	ug/L	+/-5	4.53 J		3.54 J		24.6		P
Zinc	ug/L	+/-200	430		437		1.6		P

*Analytical Methods:

P SW846 3005/6010B

Metals
–6–
Duplicate Sample Summary

SDG No.: 2013–952**Lab Code:** GEL**Contract:** ESHL00210**Client ID:** WTLAP–13–31087D**Matrix:** LIQUID**Level:** Low**Sample ID:** 327940001**Duplicate ID:** 1202901491**Percent Solids for Dup:** N/A

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

***Analytical Methods:**

AV EPA 245.1/245.2

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-952

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>
1202892840								
	Antimony	ug/L	50	51.3		103	80-120	MS
	Arsenic	ug/L	50	46.9		93.8	80-120	MS
	Cadmium	ug/L	50	53.4		107	80-120	MS
	Chromium	ug/L	50	49.6		99.2	80-120	MS
	Lead	ug/L	50	51.1		102	80-120	MS
	Molybdenum	ug/L	50	46.5		92.9	80-120	MS
	Nickel	ug/L	50	51.2		102	80-120	MS
	Selenium	ug/L	50	53.6		107	80-120	MS
	Silver	ug/L	50	52.1		104	80-120	MS
	Thallium	ug/L	50	47		94	80-120	MS
	Uranium	ug/L	50	55.4		111	80-120	MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-952

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>
1202892845								
	Aluminum	ug/L	5000	5080		102	80-120	P
	Barium	ug/L	500	502		100	80-120	P
	Beryllium	ug/L	500	501		100	80-120	P
	Boron	ug/L	500	470		93.9	80-120	P
	Calcium	ug/L	5000	5010		100	80-120	P
	Cobalt	ug/L	500	500		100	80-120	P
	Copper	ug/L	500	530		106	80-120	P
	Iron	ug/L	5000	5110		102	80-120	P
	Magnesium	ug/L	5000	5140		103	80-120	P
	Manganese	ug/L	500	501		100	80-120	P
	Potassium	ug/L	5000	4980		99.6	80-120	P
	Silica	ug/L	10700	10500		97.8	80-120	P
	Sodium	ug/L	5000	5410		108	80-120	P
	Strontium	ug/L	500	512		102	80-120	P
	Tin	ug/L	500	499		99.9	80-120	P
	Vanadium	ug/L	500	514		103	80-120	P
	Zinc	ug/L	500	509		102	80-120	P

*Analytical Methods:

P SW846 3005/6010B

METALS

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Laboratory Control Sample Summary

SDG NO. 2013-952

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>
1202901487	Mercury	ug/L	2	2.05		103	85-115	AV

*Analytical Methods:

AV EPA 245.1/245.2

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-952

Client ID: WST35-13-31938L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 327626001

Serial Dilution ID: 1202892843

<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	9.94		8.06	J	19			MS
Arsenic	12.8		17.7	J	38.4			MS
Cadmium	.11	U	.55	U				MS
Chromium	2	U	10	U				MS
Lead	.5	U	2.5	U				MS
Molybdenum	103		87.8		14.6	E	10	MS
Nickel	516		756		46.4	E	10	MS
Selenium	1.5	U	7.5	U				MS
Silver	2.66		2.42	J	9.16			MS
Thallium	.45	U	2.25	U				MS
Uranium	1.67		1.44		13.5			MS

*Analytical Methods:

MS SW846 3005/6020 DOE-AL

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-952

Client ID: WST35-13-31938L

Contract: ESHL00210

Matrix: LIQUID

Level: Low

Sample ID: 327626001

Serial Dilution ID: 1202892848

<u>Analyte</u>	<u>Initial Value ug/L</u>	<u>C</u>	<u>Serial Value ug/L</u>	<u>C</u>	<u>% Difference</u>	<u>Qual</u>	<u>Acceptance Limit</u>	<u>M*</u>
Aluminum	68	U	340	U				P
Barium	1.03	J	5	U	100			P
Beryllium	1	U	5	U				P
Boron	659		647		1.69			P
Calcium	50	U	250	U				P
Cobalt	14.9		13.2	J	11.1			P
Copper	1860		1790		3.77		10	P
Iron	75.4	J	150	U	100			P
Magnesium	110	U	550	U				P
Manganese	84.3		86.5		2.59			P
Potassium	771		831		7.75			P
Silica	11000		11400		3.84		10	P
Sodium	105000		111000		6.06		10	P
Strontium	1	U	5	U				P
Tin	813		726		10.7	E	10	P
Vanadium	4.53	J	6.03	J	33			P
Zinc	21.5		18.8	J	12.5			P

*Analytical Methods:

P SW846 3005/6010B

METALS

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Serial Dilution Sample Summary

SDG NO. 2013-952 **Client ID:** WTLAP-13-31087L**Contract:** ESHL00210**Matrix:** LIQUID **Level:** Low**Sample ID:** 327940001 **Serial Dilution ID:** 1202901493

<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

Miscellaneous

DATA EXCEPTION REPORT			
Mo.Day Yr. 02-JUL-13	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ICP/MS	Test / Method: SW846 3005/6020 DOE-AL	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1308248	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 327622(2013-951),327623(2013-952),327626(2013-953) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description: 1. Failed Recovery for MS/PS: QC 1202892842MS		The matrix spike recovery failed outside of the control limits for Cr, Mo, Pb, Cd and Se due to possible matrix interferences and/or non-homogeneity. Per GEL's accredited methods and SOPs, a corrective action is not required and the data is qualified and reported.	

Originator's Name:
Elizabeth Janssen 04-JUL-13

Data Validator/Group Leader:
Samantha Jacobs 04-JUL-13

DATA EXCEPTION REPORT			
Mo.Day Yr. 08-JUL-13	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: ICP	Test / Method: SW846 3005/6010B	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1308250	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 327622(2013-951),327623(2013-952),327626(2013-953) Application Issues: Failed Recovery for MS/PS			
Specification and Requirements		DER Disposition:	
Exception Description: 1. Failed Recovery for MS/PS: QC 1202892847MS		1. The matrix spike recovery failed outside of the control limits for aluminum,barium,beryllium,calcium,iron,magnesium,manganese,strontium,tins,vanadium and zinc due to possible matrix interferences and/or non-homogeneity. Per GEL's accredited methods and SOPs, a corrective action is not required and the data is qualified and reported. Sample #327626001 had white particles that settles down in the bottom of container.	

Originator's Name:
Helen Camello 08-JUL-13

Data Validator/Group Leader:
Louise Smith 09-JUL-13

General Chem Analysis

Case Narrative

**General Chemistry Narrative
ARS International (ARSL)
SDG 2013-952**

Method/Analysis Information

Product: Carbon, Total Organic

Analytical Batch: 1309042

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
327623001	CAPU-13-34775
1202894929	Method Blank (MB)
1202894930	327623001(CAPU-13-34775) Sample Duplicate (DUP)
1202894931	327623001(CAPU-13-34775) Post Spike (PS)
1202894932	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327623001 (CAPU-13-34775).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

The following samples were re-analyzed due to CCV failure: 1202894929 (MB), 1202894930 (CAPU-13-34775), 1202894931 (CAPU-13-34775), 1202894932 (LCS) and 327623001 (CAPU-13-34775).

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

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

Electronic Packaging Comment

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

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

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

Method/Analysis Information

Product: Specific Conductivity

Analytical Batch: 1311655

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
327623002	CAPU-13-34783
1202901423	327622002(CALA-13-33431) Sample Duplicate (DUP)
1202901425	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327622002 (CALA-13-33431).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: pH

Analytical Batch: 1308135 **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
327623002	CAPU-13-34783
1202892559	Laboratory Control Sample (LCS)
1202892561	327623002(CAPU-13-34783) Sample Duplicate (DUP)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

The Electrode analysis was performed on a 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: 327623002 (CAPU-13-34783).

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: 327623002 (CAPU-13-34783).

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: 1194703 327623002 (CAPU-13-34783).

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: 1307985

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
327623002	CAPU-13-34783
1202892153	Method Blank (MB)
1202892154	327396001(CAPU-13-34785) Sample Duplicate (DUP)
1202892155	327396001(CAPU-13-34785) Post Spike (PS)
1202892156	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 MBs analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327396001 (CAPU-13-34785).

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 values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202892154 (CAPU-13-34785).

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 following samples were re-analyzed due to CCV failure: 1202892153 (MB), 1202892154 (CAPU-13-34785), 1202892155 (CAPU-13-34785), 1202892156 (LCS) and 327623002 (CAPU-13-34783).

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

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

Manual Integrations

The following samples from this sample group had to be manually integrated due to errors in the instrument software peak integration: 1202892154 (CAPU-13-34785), 1202892155 (CAPU-13-34785) and 327623002 (CAPU-13-34783).

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: 1308128 **Method:** EPA 350.1 Nitrogen and Ammonia L

Prep Batch : 1308126 **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
327623002	CAPU-13-34783
1202892527	Method Blank (MB)
1202892528	327172002(CAPU-13-34781) Sample Duplicate (DUP)
1202892530	327172002(CAPU-13-34781) Matrix Spike (MS)
1202892532	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Initial Calibration

All initial calibration requirements have been met for this SDG.

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327172002 (CAPU-13-34781).

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

One or more of the values for the sample and/or duplicate are less than 5 times the Practical Quantitation Limit (PQL), and the difference is within one PQL value; therefore, the RPD is not applicable. 1202892528 (CAPU-13-34781).

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 CCV failure: 327623002 (CAPU-13-34783).

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

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product:	Total Kjeldahl Nitrogen		
Analytical Batch:	1308288	Method:	Nitrogen and Total Kjeldahl (TKN)
Prep Batch :	1308287	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
327623001	CAPU-13-34775
1202892933	Method Blank (MB)
1202892934	327172001(CAPU-13-34773) Sample Duplicate (DUP)
1202892935	327172003(CAPU-13-34778) Sample Duplicate (DUP)
1202892936	327172001(CAPU-13-34773) Matrix Spike (MS)
1202892937	327172003(CAPU-13-34778) Matrix Spike (MS)
1202892938	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# 14.

Preparation/Analytical Method Verification

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

Calibration Information

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

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following samples were selected for QC analysis: 327172001 (CAPU-13-34773) and 327172003 (CAPU-13-34778).

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

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

Duplicate Relative Percent Difference (RPD) Statement

The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample: 1202892934 (CAPU-13-34773). The values for the sample and duplicate are less than the Practical Quantitation Limit (PQL); therefore, the RPD is not applicable. 1202892935 (CAPU-13-34778).

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: 1197089 1202892934 (CAPU-13-34773).

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:	1308998	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
327623002	CAPU-13-34783
1202894789	Method Blank (MB)
1202894792	327622002(CALA-13-33431) Sample Duplicate (DUP)
1202894795	327622002(CALA-13-33431) Post Spike (PS)
1202894796	Laboratory Control Sample (LCS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Calibration Verification Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

acceptance limits.

Y Intercept Rule

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

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

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327622002 (CALA-13-33431).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

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

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

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:	1308132	Method:	EPA 365.4 Phosphorus and Total in
Prep Batch :	1308131	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
327623002	CAPU-13-34783
1202892537	Method Blank (MB)
1202892538	Laboratory Control Sample (LCS)
1202892539	327626001(WST35-13-31938) Sample Duplicate (DUP)
1202892540	327626001(WST35-13-31938) Matrix Spike (MS)

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

SOP Reference

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

Preparation/Analytical Method Verification

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

Calibration Information

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

Continuing Calibration Blanks

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

Calibration Verification Information (CCV)

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

Y Intercept Rule

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

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327626001 (WST35-13-31938).

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

The sample concentration is more than four times the spike nominal concentration; therefore, the spike recovery is not applicable. 1202892540 (WST35-13-31938).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Preservation/Integrity

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

Sample Dilutions

The following samples in this sample group were diluted due to high concentration: 1202892539 (WST35-13-31938) and 1202892540 (WST35-13-31938).

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Solids, Total Dissolved

Analytical Batch: 1308070

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
327623002	CAPU-13-34783
1202892376	Method Blank (MB)
1202892380	Laboratory Control Sample (LCS)
1202892385	327527002(CALA-13-33435) Sample Duplicate (DUP)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-001 REV# 13.

Preparation/Analytical Method Verification

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

Calibration Information

The 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: 327527002 (CALA-13-33435).

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Sample Aliquot

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Method/Analysis Information

Product: Alkalinity

Analytical Batch: 1310342 **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
327623002	CAPU-13-34783
1202898281	327707004(Buckman08-12-34755) Matrix Spike (MS)
1202898282	327707004(Buckman08-12-34755) Sample Duplicate (DUP)
1202898290	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# 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 Titration analysis was performed on a Manually operated buret.

Initial Standardization

The titrant was properly standardized

Quality Control (QC) Information

Laboratory Control Sample (LCS) Recovery

The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation

The following sample was selected for QC analysis: 327707004 (Buckman08-12-34755).

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

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

Duplicate Relative Percent Difference (RPD) Statement

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

Technical Information

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

Holding Times

All samples in this SDG met the specified holding time.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-analysis

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

Miscellaneous Information

Data Exception (DER) Documentation

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

Additional Comments

Additional comments were not required for this SDG.

Electronic Packaging Comment

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

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

Certification Statement

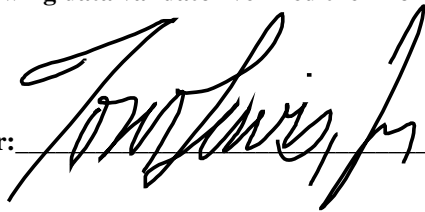
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

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

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

Reviewer:



Date:

11 July 13

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: 2013-952 GEL Work Order: 327623

The Qualifiers in this report are defined as follows:

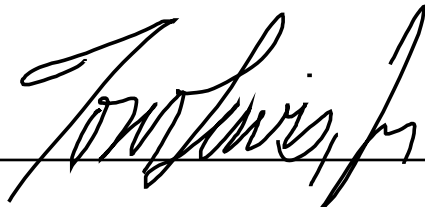
- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- E %difference of sample and SD is >10%. Sample concentration must meet flagging criteria
- H Analytical holding time was exceeded
- J Value is estimated
- N Metals--The Matrix spike sample recovery is not within specified control limits
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

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

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

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

Reviewed by



GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 9, 2013

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

Client SDG: 2013-952

Client Sample ID: CAPU-13-34775
Sample ID: 327623001
Matrix: W
Collect Date: 12-JUN-13 11:45
Receive Date: 14-JUN-13
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	J	0.621	0.330	1.00	mg/L	1	TSM	06/21/13	1508	1309042	1
Nutrient Analysis											
Nitrogen, Total Kjeldahl (TKN) "As Received"											
Nitrogen, Total Kjeldahl	U	ND	0.033	0.100	mg/L	1	KLP1	06/25/13	1120	1308288	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	06/24/13	1600	1308287

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 9060	
2	EPA 351.2	

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: July 9, 2013

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

Client SDG: 2013-952

Client Sample ID: CAPU-13-34783
Sample ID: 327623002
Matrix: W
Collect Date: 12-JUN-13 11:45
Receive Date: 14-JUN-13
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		142	1.00	1.00	umhos/cm	1	LXA1	07/01/13	1553	1311655	1
Electrode Analysis											
EPA 150.1 pH "As Received"											
pH at Temp 19.0C	H	7.63	0.010	0.100	SU	1	LXA1	06/14/13	1514	1308135	2
Ion Chromatography											
EPA 300.0 Anions Liquid 28 day "As Received"											
Bromide	U	ND	0.067	0.200	mg/L	1	MAR1	06/26/13	1710	1307985	3
Chloride		2.17	0.067	0.200	mg/L	1					
Fluoride		0.227	0.033	0.100	mg/L	1					
Sulfate		2.51	0.133	0.400	mg/L	1					
Nutrient Analysis											
EPA 350.1 Nitrogen, Ammonia L "As Received"											
Nitrogen, Ammonia	U	ND	0.017	0.050	mg/L	1	KLP1	06/19/13	1348	1308128	4
EPA 353.2 Nitrogen, Nitrate/Nitrite "As Received"											
Nitrogen, Nitrate/Nitrite		0.450	0.017	0.050	mg/L	1	KLP1	06/24/13	1518	1308998	5
EPA 365.4 Phosphorus, Total in "As Received"											
Phosphorus, Total as P	J	0.0395	0.017	0.050	mg/L	1	KLP1	06/18/13	1234	1308132	6
Solids Analysis											
EPA 160.1 Solids, Dissolved-F "As Received"											
Total Dissolved Solids		151	3.40	14.3	mg/L		LYG1	06/14/13	1452	1308070	7
Titration Analysis											
EPA 310.1 Total Alkalinity "As Received"											
Alkalinity, Total as CaCO3		62.9	0.725	1.00	mg/L		LXA1	06/25/13	1513	1310342	8
Carbonate alkalinity (CaCO3)	U	ND	0.725	1.00	mg/L						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
EPA 350.2 Prep	EPA 350.1 Ammonia Nitrogen Prep	KLP1	06/19/13	1230	1308126
EPA 365.4 Prep	EPA 365.4 Phosphorus, Total in liquid PR	KLP1	06/17/13	1600	1308131

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Certificate of Analysis

Report Date: July 9, 2013

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

Client SDG: 2013-952

Client Sample ID: CAPU-13-34783
Sample ID: 327623002

Project: ESHL00210
Client ID: ARSL001

The following Analytical Methods were performed:

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

Notes:

Quality Control Summary

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QC Summary

Report Date: July 9, 2013

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

Contact: Mr. Keith Greene

Workorder: 327623

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Carbon Analysis											
Batch	1309042										
QC1202894930	327623001	DUP									
Total Organic Carbon Average	J	0.621	J	0.547	mg/L	12.7	^	(+/-1.00)	TSM	06/21/13	15:42
QC1202894932	LCS										
Total Organic Carbon Average	10.0			9.79	mg/L			(85%-115%)		06/21/13	14:26
QC1202894929	MB										
Total Organic Carbon Average			U	ND	mg/L					06/21/13	14:17
QC1202894931	327623001	PS									
Total Organic Carbon Average	10.0	J	0.621	10.2	mg/L			(65%-120%)		06/21/13	16:02
Conductivity Analysis											
Batch	1311655										
QC1202901423	327622002	DUP									
Conductivity		412		408	umhos/cm	0.976		(0%-10%)	LXA1	07/01/13	15:53
QC1202901425	LCS										
Conductivity	1410			1440	umhos/cm			(95%-105%)		07/01/13	15:51
Electrode Analysis											
Batch	1308135										
QC1202892561	327623002	DUP									
pH	H	7.63	H	7.61	SU	0.262		(0%-10%)	LXA1	06/14/13	15:19
QC1202892559	LCS										
pH	7.00			7.00	SU			(99%-101%)		06/14/13	11:50
Ion Chromatography											
Batch	1307985										
QC1202892154	327396001	DUP									
Bromide	J	0.0689	U	ND	mg/L	N/A	^		MAR1	06/26/13	12:38
Chloride		3.02		3.03	mg/L	0.522		(0%-20%)			
Fluoride		0.247		0.259	mg/L	4.79	^	(+/-0.100)			
Sulfate		3.99		3.91	mg/L	1.90		(0%-20%)			
QC1202892156	LCS										
Bromide	1.25			1.27	mg/L			(90%-110%)		06/26/13	11:38

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1307985										
Chloride	5.00			4.79	mg/L		95.8	(90%-110%)	MAR1	06/26/13	11:38
Fluoride	2.50			2.57	mg/L		103	(90%-110%)			
Sulfate	10.0			10.1	mg/L		101	(90%-110%)			
QC1202892153	MB										
Bromide			U	ND	mg/L					06/26/13	11:08
Chloride			U	ND	mg/L						
Fluoride			U	ND	mg/L						
Sulfate			U	ND	mg/L						
QC1202892155	327396001 PS										
Bromide	1.25	J	0.0689	1.30	mg/L		98.6	(90%-110%)		06/26/13	13:08
Chloride	5.00		3.02	8.11	mg/L		102	(90%-110%)			
Fluoride	2.50		0.247	2.76	mg/L		101	(90%-110%)			
Sulfate	10.0		3.99	14.1	mg/L		101	(90%-110%)			
Nutrient Analysis											
Batch	1308128										
QC1202892528	327172002 DUP										
Nitrogen, Ammonia			0.137	0.090	mg/L	41.4 ^		(+/-0.050)	KLP1	06/19/13	13:16
QC1202892532	LCS										
Nitrogen, Ammonia	1.00			1.01	mg/L		101	(90%-110%)		06/19/13	13:14
QC1202892527	MB										
Nitrogen, Ammonia			J	0.0223	mg/L					06/19/13	13:14
QC1202892530	327172002 MS										
Nitrogen, Ammonia	1.00		0.137	1.22	mg/L		108	(90%-110%)		06/19/13	13:17
Batch	1308132										
QC1202892539	327626001 DUP										
Phosphorus, Total as P			16.6	16.8	mg/L	1.20		(0%-31%)	KLP1	06/18/13	13:24
QC1202892538	LCS										
Phosphorus, Total as P	1.00			1.02	mg/L		102	(76%-120%)		06/18/13	12:22

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Nutrient Analysis											
Batch	1308132										
QC1202892537 MB											
Phosphorus, Total as P			U	ND	mg/L				KLP1	06/18/13	12:21
QC1202892540 327626001 MS											
Phosphorus, Total as P	1.00	16.6		73.2	mg/L		N/A	(62%-139%)		06/18/13	13:25
Batch	1308288										
QC1202892934 327172001 DUP											
Nitrogen, Total Kjeldahl		0.476		0.282	mg/L	51.2**^		(+/-0.100)	KLP1	06/25/13	11:04
QC1202892935 327172003 DUP											
Nitrogen, Total Kjeldahl	U	ND	J	0.0413	mg/L	N/A				06/25/13	11:07
QC1202892938 LCS											
Nitrogen, Total Kjeldahl	1.00			1.07	mg/L		107	(90%-110%)		06/25/13	11:02
QC1202892933 MB											
Nitrogen, Total Kjeldahl			U	ND	mg/L					06/25/13	11:02
QC1202892936 327172001 MS											
Nitrogen, Total Kjeldahl	1.00	0.476		1.38	mg/L		90.4	(90%-110%)		06/25/13	11:05
QC1202892937 327172003 MS											
Nitrogen, Total Kjeldahl	1.00	U	ND	1.00	mg/L		100	(90%-110%)		06/25/13	11:07
Batch	1308998										
QC1202894792 327622002 DUP											
Nitrogen, Nitrate/Nitrite	J	0.0259	J	0.0244	mg/L	5.96 ^		(+/-0.050)	KLP1	06/24/13	15:16
QC1202894796 LCS											
Nitrogen, Nitrate/Nitrite	1.00			1.04	mg/L		104	(90%-110%)		06/24/13	14:57
QC1202894789 MB											
Nitrogen, Nitrate/Nitrite			U	ND	mg/L					06/24/13	14:55
QC1202894795 327622002 PS											
Nitrogen, Nitrate/Nitrite	1.00	J	0.0259	1.06	mg/L		103	(90%-110%)		06/24/13	15:17
Solids Analysis											
Batch	1308070										
QC1202892385 327527002 DUP											
Total Dissolved Solids		194		199	mg/L	2.18		(0%-10%)	LYG1	06/14/13	13:23
QC1202892380 LCS											
Total Dissolved Solids	300			304	mg/L		101	(95%-105%)		06/14/13	13:23

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Solids Analysis											
Batch	1308070										
QC1202892376	MB										
Total Dissolved Solids			J	7.14	mg/L				LYG1	06/14/13	13:23
Titration Analysis											
Batch	1310342										
QC1202898282	327707004	DUP									
Alkalinity, Total as CaCO3		267		266	mg/L	0.393		(0%-20%)	LXA1	06/25/13	16:26
Carbonate alkalinity (CaCO3)		U	ND	U	ND	mg/L	N/A				
QC1202898290	LCS										
Alkalinity, Total as CaCO3		50.0		51.9	mg/L		104	(90%-110%)		06/25/13	15:09
QC1202898281	327707004	MS									
Alkalinity, Total as CaCO3		50.0	267	318	mg/L		N/A	(80%-120%)		06/25/13	16:29

Notes:

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

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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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 Validator/Group Leader:
Jamie Johnson 26-JUN-13

DATA EXCEPTION REPORT			
Mo.Day Yr. 25-JUN-13	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: LACHAT Flow Injection Analyzer	Test / Method: EPA 351.2, EPA 351.2 SC	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1308288	Sample Numbers: See below.		
Potentially affected work order(s)(SDG): 327172(2013-926),327279(2013-934),327280(2013-935),327394,327396(2013-940),327527(2013-947),327622(2013-951),327623(2013-952),327635,327704(2013-956),327705(2013-957),327706(2013-958),327707(2013-959) Application Issues: Failed RPD for DUP			
Specification and Requirements Exception Description:		DER Disposition:	
1. Failed RPD for DUP: QC 1202892934DUP		1. The Relative Percent Difference (RPD) between the sample and duplicate falls outside of the established acceptance limits because of the heterogeneous matrix of the sample.	

Originator's Name:
Kristen Parson 25-JUN-13

Data Validator/Group Leader:
Julia Hamilton 25-JUN-13

Radiological Analysis

**Radiochemistry Case Narrative
ARS International (ARSL)
SDG 2013-952
Work Order 327623**

Method/Analysis Information

Product: Alphaspec Am241 Liquid
Analytical Method: DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number: 1307462

Sample ID	Client ID
327623001	CAPU-13-34775
1202890847	Method Blank (MB)
1202890848	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890849	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202890847 (MB) and 1202890849 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

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:	Alphaspec Pu, Liquid
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1307464

Sample ID	Client ID
327623001	CAPU-13-34775
1202890855	Method Blank (MB)
1202890856	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890857	Laboratory Control Sample (LCS)

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

SOP Reference

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

Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 24.

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202890855 (MB) and 1202890857 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

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

Samples 1202890855 (MB) and 1202890856 (CAPU-13-34777) were recounted due to high MDCs. The recounts are reported.

Miscellaneous Information:

Data Exception (DER) Documentation

Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1196391 was generated due to RDL less than MDA. 1. The duplicate, 1202890856, did not meet the Pu-239/240 detection limit. 1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The duplicate does meet the tracer yield requirement and has greater than 400 tracer counts. 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 U, Liquid
Analytical Method: DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number: 1307467

Sample ID	Client ID
327623001	CAPU-13-34775
1202890863	Method Blank (MB)
1202890864	327396002(CAPU-13-34777) Sample Duplicate (DUP)
1202890865	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:**Calibration Information**

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

Standards Information

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

Sample Geometry

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

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

Aliquots for samples 1202890863 (MB) and 1202890865 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327396002 (CAPU-13-34777). The QC was from ARSL work order 327396.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The U-238 blank result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:**Holding Time**

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

Sample Re-prep/Re-analysis

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

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 U-238 blank result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: **Gammasec**

Analytical Method: EPA 901.1

Analytical Batch Number: 1307967

Sample ID	Client ID
327623001	CAPU-13-34775
1202892110	Method Blank (MB)
1202892111	327527001(CALA-13-33427) Sample Duplicate (DUP)
1202892112	Laboratory Control Sample (LCS)

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

SOP Reference

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

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met. The initial Calibrations were performed in July 2012, August 2012 and June 2013.

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

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

Designated QC

The following sample was used for QC: 327527001 (CALA-13-33427). The QC was from ARSL work order 327527.

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.

Additional Comments

Additional comments were not required for this sample set.

Blank Decision Level

The blank result is less than the decision level.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product: WSP-GrossA/B
Analytical Method: EPA 900.0/SW846 9310
Analytical Batch Number: 1308529

Sample ID	Client ID
327623001	CAPU-13-34775
1202893584	Method Blank (MB)
1202893585	327623001(CAPU-13-34775) Sample Duplicate (DUP)
1202893586	327623001(CAPU-13-34775) Matrix Spike (MS)
1202893587	327623001(CAPU-13-34775) Matrix Spike Duplicate (MSD)
1202893588	Laboratory Control Sample (LCS)

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

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-001 REV# 16.

Calibration Information:

Calibration Information

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

Aliquots for samples 1202893584 (MB) and 1202893588 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327623001 (CAPU-13-34775). The QC was from ARSL work order 327623.

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 1202893586 (CAPU-13-34775) was recounted due to high recovery. The recount is reported. Samples 1202893585 (CAPU-13-34775) and 327623001 (CAPU-13-34775) were recounted due to high relative percent difference/relative error ratio. The recounts are reported.

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, 1202893586 (CAPU-13-34775) and 1202893587 (CAPU-13-34775), 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.

Method/Analysis Information

Product: GFPC, Sr90, liquid

Analytical Method: EPA 905.0 Modified

Analytical Batch Number: 1308549

Sample ID	Client ID
327623001	CAPU-13-34775
1202893647	Method Blank (MB)
1202893648	327622001(CALA-13-33423) Sample Duplicate (DUP)

1202893649 327622001(CALA-13-33423) Matrix Spike (MS)
1202893650 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# 16.

Calibration Information:

Calibration Information

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

Standards Information

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

Sample Geometry

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

Quality Control (QC) Information:

Blank Information

Aliquots for samples 1202893647 (MB) and 1202893650 (LCS) were changed to 1.0 per client request.

Designated QC

The following sample was used for QC: 327622001 (CALA-13-33423). The QC was from ARSL work order 327622.

QC Information

All of the QC samples met the required acceptance limits.

CSU

The blank 1202893647 (MB) result is greater than 1.65 times the CSU but less than the MDC.

Technical Information:

Holding Time

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

Sample Re-prep/Re-analysis

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

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, 1202893649 (CALA-13-33423), aliquot was reduced to conserve sample volume.

Blank Decision Level

The blank 1202893647 (MB) result is greater than the decision level but less than the MDC.

Qualifier Information

Manual qualifiers were not required.

Certification Statement

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

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Qualifier Definition Report for

ARSL001 ARS International (63641-10)

Client SDG: 2013-952 GEL Work Order: 327623

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature:



Name: Kate Gellatly

Date: 03 JUL 2013

Title: Analyst I

DATA EXCEPTION REPORT			
Mo.Day Yr. 21-JUN-13	Division: Radiochemistry	Quality Criteria: Specifications	Type: Process
Instrument Type: ALPHA SPECTROMETER	Test / Method: DOE EML HASL-300, Pu-11-RC Modified	Matrix Type: Liquid	Client Code: ESHL
Batch ID: 1307464	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 327396(2013-940),327527(2013-947),327622(2013-951),327623(2013-952) Application Issues: RDL less than MDA			
Specification and Requirements		DER Disposition:	
Exception Description:			
1. The duplicate, 1202890856, did not meet the Pu-239/240 detection limit.		1. When a blank population is performed the MDC may be greater than the RDL due to the high standard deviation. The duplicate does meet the tracer yield requirement and has greater than 400 tracer counts. Reporting results.	

Originator's Name:
Melanie Aycock 21-JUN-13

Data Validator/Group Leader:
Jessica Davis 27-JUN-13

Sample Data Summary

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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: Mr. Keith Greene
Project: LANL-WQH Water Samples

Report Date: July 3, 2013

Client Sample ID: CAPU-13-34775
Sample ID: 327623001
Matrix: W
Collect Date: 12-JUN-13
Receive Date: 14-JUN-13
Collector: Client

Project: ESHL00210
Client ID: ARSL001

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

Alphaspec Am241 Liquid "As Received"

Americium-241	U	0.00286	+/-0.00496	0.0435	0.0179	+/-0.00496	0.050	pCi/L		NXP2	06/19/13	1013	1307462	1
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Alphaspec Pu, Liquid "As Received"

Plutonium-238	U	0.00	+/-0.00385	0.0255	0.00905	+/-0.00385	0.050	pCi/L		NXP2	06/19/13	1013	1307464	2
Plutonium-239/240	U	-0.00272	+/-0.00609	0.0536	0.0231	+/-0.00609	0.050	pCi/L						

Alphaspec U, Liquid "As Received"

Uranium-234		0.331	+/-0.0298	0.0582	0.0255	+/-0.0367	1.00	pCi/L		NXP2	06/19/13	1013	1307467	3
Uranium-235/236	U	0.00982	+/-0.00866	0.0453	0.0182	+/-0.00868	1.00	pCi/L						
Uranium-238		0.109	+/-0.0178	0.0372	0.015	+/-0.0191	0.500	pCi/L						

Rad Gamma Spec Analysis

Gammasespec "As Received"

Cesium-137	U	-0.13	+/-0.923	3.26	1.51	+/-0.924	8.00	pCi/L		MXR1	06/21/13	1209	1307967	4
Cobalt-60	U	-0.487	+/-0.999	3.53	1.60	+/-1.01	8.00	pCi/L						
Neptunium-237	U	0.0615	+/-1.93	6.58	3.14	+/-1.93	10.0	pCi/L						
Potassium-40	U	7.26	+/-12.6	46.3	21.5	+/-12.7	10.0	pCi/L						
Sodium-22	U	-0.915	+/-0.883	3.05	1.36	+/-0.908	10.0	pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Sr90, liquid "As Received"

Strontium-90	U	0.142	+/-0.145	0.493	0.228	+/-0.145	0.500	pCi/L		JXR1	06/27/13	0829	1308549	5
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WSP-GrossA/B "As Received"

Beta	U	0.373	+/-0.753	2.72	1.19	+/-0.754	3.00	pCi/L		DYT1	06/25/13	1744	1308529	6
Alpha	U	-0.0322	+/-0.464	2.31	0.776	+/-0.464	3.00	pCi/L		DYT1	06/26/13	1721	1308529	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"	1307462	77.0	(50%-105%)
Plutonium-242 Tracer	Alphaspec Pu, Liquid "As Received"	1307464	86.5	(50%-105%)
Uranium-232 Tracer	Alphaspec U, Liquid "As Received"	1307467	82.1	(50%-105%)

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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: July 3, 2013

Contact: Mr. Keith Greene

Project: LANL-WQH Water Samples

Client Sample ID: CAPU-13-34775

Sample ID: 327623001

Project: ESHL00210

Client ID: ARSL001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Surrogate/Tracer Recovery	Test							Batch ID	Recovery%	Acceptable Limits				
Strontium Carrier		GFPC, Sr90, liquid "As Received"						1308549	79.5	(50%-105%)				

Notes:

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

Quality Control Data

GEL LABORATORIES LLC

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QC Summary

Report Date: July 3, 2013

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

Contact: Mr. Keith Greene

Workorder: 327623

Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1307462										
QC1202890848	327396002	DUP									
Americium-241	U	0.0117	U	0.00265	pCi/L	0.351		(0-1)	NXP2	06/19/13	10:13
	Uncert:	+/-0.00826		+/-0.00458							
	TPU:	+/-0.00827		+/-0.00458							
**Americium-243 Tracer	2.62	1.98		2.19	pCi/L		83.5	(50%-105%)			
	Uncert:	+/-0.0869		+/-0.0829							
	TPU:	+/-0.143		+/-0.139							
QC1202890849	LCS										
Americium-241	1.41			1.27	pCi/L		89.9	(80%-120%)	NXP2	06/19/13	10:13
	Uncert:			+/-0.0532							
	TPU:			+/-0.0762							
**Americium-243 Tracer	2.09			1.70	pCi/L		81.3	(50%-105%)			
	Uncert:			+/-0.0676							
	TPU:			+/-0.113							
QC1202890847	MB										
Americium-241			U	0.00	pCi/L				NXP2	06/19/13	10:13
	Uncert:			+/-0.00594							
	TPU:			+/-0.00594							
**Americium-243 Tracer	2.09			1.75	pCi/L		83.5	(50%-105%)			
	Uncert:			+/-0.0659							
	TPU:			+/-0.110							
Batch	1307464										
QC1202890856	327396002	DUP									
Plutonium-238	U	-0.00222	U	-0.00932	pCi/L	0.329		(0-1)	NXP2	06/20/13	13:38
	Uncert:	+/-0.00384		+/-0.00695							
	TPU:	+/-0.00384		+/-0.00695							
Plutonium-239/240	U	0.00222	U	0.0528	pCi/L	1.16		(0-1)			
	Uncert:	+/-0.00665		+/-0.0149							
	TPU:	+/-0.00666		+/-0.0151							
**Plutonium-242 Tracer	2.44	1.79		1.22	pCi/L		50	(50%-105%)			
	Uncert:	+/-0.0737		+/-0.0877							
	TPU:	+/-0.125		+/-0.142							
QC1202890857	LCS										
Plutonium-238			U	0.00818	pCi/L			(80%-120%)	NXP2	06/19/13	10:13
	Uncert:			+/-0.00721							
	TPU:			+/-0.00722							
Plutonium-239/240	1.97			1.93	pCi/L		98.1	(80%-120%)			
	Uncert:			+/-0.0727							
	TPU:			+/-0.116							
**Plutonium-242 Tracer	1.95			1.25	pCi/L		64.2	(50%-105%)			
	Uncert:			+/-0.0731							
	TPU:			+/-0.117							
QC1202890855	MB										

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1307464										
Plutonium-238			U	-0.00818	pCi/L				NXP2	06/20/13	13:38
				Uncert: +/-0.00646							
				TPU: +/-0.00646							
Plutonium-239/240			U	0.00613	pCi/L						
				Uncert: +/-0.00541							
				TPU: +/-0.00541							
**Plutonium-242 Tracer	1.95			1.21	pCi/L		62.1	(50%-105%)			
				Uncert: +/-0.0634							
				TPU: +/-0.105							
Batch	1307467										
QC1202890864	327396002	DUP									
Uranium-234		0.570		0.560	pCi/L	0.041		(0-1)	NXP2	06/19/13	10:13
		Uncert: +/-0.0419		+/-0.0425							
		TPU: +/-0.0561		+/-0.0563							
Uranium-235/236		U 0.0221	U	0.015	pCi/L	0.169		(0-1)			
		Uncert: +/-0.0104		+/-0.0106							
		TPU: +/-0.0105		+/-0.0106							
Uranium-238		0.301		0.360	pCi/L	0.385		(0-1)			
		Uncert: +/-0.0303		+/-0.0333							
		TPU: +/-0.0361		+/-0.0409							
**Uranium-232 Tracer	2.69	1.95		1.94	pCi/L		72.1	(50%-105%)			
		Uncert: +/-0.0898		+/-0.0909							
		TPU: +/-0.198		+/-0.199							
QC1202890865	LCS										
Uranium-234				2.74	pCi/L				NXP2	06/19/13	10:13
		Uncert: +/-0.0787		+/-0.195							
		TPU: 0.136			pCi/L						
		Uncert: +/-0.0198		+/-0.0217							
Uranium-238	2.70			2.87	pCi/L		106	(80%-120%)			
		Uncert: +/-0.0804		+/-0.203							
		TPU: 1.66			pCi/L		76.8	(50%-105%)			
**Uranium-232 Tracer	2.15			1.66	pCi/L						
		Uncert: +/-0.0701		+/-0.157							
		TPU: 2.74									
QC1202890863	MB										
Uranium-234			U	0.00	pCi/L				NXP2	06/19/13	10:13
		Uncert: +/-0.00567		+/-0.00567							
		TPU: 0.00	U		pCi/L						
		Uncert: +/-0.00496		+/-0.00496							
		TPU: 0.016	U		pCi/L						
		Uncert: +/-0.00802		+/-0.00809							
		TPU: 1.83			pCi/L		84.7	(50%-105%)			
**Uranium-232 Tracer	2.15			1.83	pCi/L						
		Uncert: +/-0.0659		+/-0.153							
		TPU: 2.74									

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Alpha Spec											
Batch	1307467	TPU:									
Rad Gamma Spec											
Batch	1307967										
QC1202892111	327527001	DUP									
Cesium-137	U	0.920	U	1.42	pCi/L	0.113		(0-1)	MXR1	06/23/13	11:40
	Uncert:	+/-0.955		+/-1.25							
	TPU:	+/-0.979		+/-1.25							
Cobalt-60	U	-0.381	U	2.96	pCi/L	0.711		(0-1)			
	Uncert:	+/-0.885		+/-1.29							
	TPU:	+/-0.889		+/-1.46							
Neptunium-237	U	-2.36	U	1.66	pCi/L	0.452		(0-1)			
	Uncert:	+/-1.97		+/-2.37							
	TPU:	+/-2.04		+/-2.40							
Potassium-40	U	3.19	U	-11.3	pCi/L	0.212		(0-1)			
	Uncert:	+/-14.0		+/-19.9							
	TPU:	+/-14.0		+/-20.0							
Sodium-22	U	-1.58	U	2.06	pCi/L	0.867		(0-1)			
	Uncert:	+/-1.06		+/-0.977							
	TPU:	+/-1.12		+/-0.981							
QC1202892112	LCS										
Americium-241	2780			2720	pCi/L		97.7	(80%-120%)	MXR1	06/24/13	12:10
	Uncert:			+/-104							
	TPU:			+/-189							
Cesium-137	6010			6020	pCi/L		100	(80%-120%)			
	Uncert:			+/-52.9							
	TPU:			+/-260							
Cobalt-60	5230			5310	pCi/L		102	(80%-120%)			
	Uncert:			+/-56.4							
	TPU:			+/-223							
Neptunium-237			U	21.2	pCi/L						
	Uncert:			+/-23.5							
	TPU:			+/-24.0							
Potassium-40			U	53.8	pCi/L						
	Uncert:			+/-40.2							
	TPU:			+/-42.2							
Sodium-22			U	-2.46	pCi/L						
	Uncert:			+/-6.50							
	TPU:			+/-6.52							
QC1202892110	MB										
Cesium-137			U	-1.84	pCi/L				MXR1	06/21/13	12:18
	Uncert:			+/-1.54							
	TPU:			+/-1.60							
Cobalt-60			U	1.29	pCi/L						
	Uncert:			+/-1.02							
	TPU:			+/-1.06							
Neptunium-237			U	-0.00884	pCi/L						
	Uncert:			+/-1.91							
	TPU:			+/-1.91							

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gamma Spec											
Batch	1307967										
Potassium-40			U	-2.39	pCi/L						
	Uncert:			+/-18.6							
	TPU:			+/-18.6							
Sodium-22			U	-0.712	pCi/L						
	Uncert:			+/-1.11							
	TPU:			+/-1.12							
Rad Gas Flow											
Batch	1308529										
QC1202893585	327623001	DUP									
Alpha	U	-0.0322	U	0.431	pCi/L	0.231		(0-1)	DYT1	06/26/1317:21	
	Uncert:	+/-0.464		+/-0.539							
	TPU:	+/-0.464		+/-0.540							
Beta	U	0.373	U	1.05	pCi/L	0.206		(0-1)		06/25/1317:45	
	Uncert:	+/-0.753		+/-0.878							
	TPU:	+/-0.754		+/-0.882							
QC1202893588	LCS										
Alpha	12.3			13.7	pCi/L		111	(80%-120%)	DYT1	06/26/1317:41	
	Uncert:			+/-0.643							
	TPU:			+/-1.43							
Beta	48.5			54.5	pCi/L		112	(80%-120%)		06/24/1316:29	
	Uncert:			+/-0.952							
	TPU:			+/-4.60							
QC1202893584	MB										
Alpha			U	-0.0731	pCi/L				DYT1	06/26/1317:21	
	Uncert:			+/-0.0167							
	TPU:			+/-0.017							
Beta			U	-0.104	pCi/L					06/24/1318:48	
	Uncert:			+/-0.0438							
	TPU:			+/-0.0438							
QC1202893586	327623001	MS									
Alpha	82.3	U	-0.0322	77.5	pCi/L		94.2	(75%-125%)	DYT1	06/27/1312:54	
	Uncert:		+/-0.464	+/-4.18							
	TPU:		+/-0.464	+/-8.01							
Beta	1940	U	0.373	2190	pCi/L		113	(75%-125%)		06/24/1316:29	
	Uncert:		+/-0.753	+/-38.7							
	TPU:		+/-0.754	+/-186							
QC1202893587	327623001	MSD									
Alpha	82.3	U	-0.0322	90.0	pCi/L	0.370	109	(0-1)	DYT1	06/26/1317:21	
	Uncert:		+/-0.464	+/-4.76							
	TPU:		+/-0.464	+/-8.88							
Beta	1940	U	0.373	2290	pCi/L	0.129	118	(0-1)		06/24/1316:29	
	Uncert:		+/-0.753	+/-39.3							
	TPU:		+/-0.754	+/-194							
Batch	1308549										
QC1202893648	327622001	DUP									
Strontium-90	U	-0.0592	U	0.105	pCi/L	0.312		(0-1)	JXR1	06/27/1308:28	
	Uncert:	+/-0.130		+/-0.132							
	TPU:	+/-0.130		+/-0.132							

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QC Summary

Workorder: 327623

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Parmname	NOM	Sample	Qual	QC	Units	RER	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1308549										
**Strontium Carrier	8.55	6.30		6.80	mg		79.5	(50%-105%)			
QC1202893650 LCS											
Strontium-90	24.2			23.8	pCi/L		98.2	(80%-120%)	JXR1	06/27/1308:28	
	Uncert:			+/-0.699							
	TPU:			+/-2.15							
**Strontium Carrier	8.55			6.90	mg		80.7	(50%-105%)			
QC1202893647 MB											
Strontium-90		U		0.124	pCi/L				JXR1	06/27/1308:28	
	Uncert:			+/-0.0737							
	TPU:			+/-0.0744							
**Strontium Carrier	8.55			6.80	mg		79.5	(50%-105%)			
QC1202893649 327622001 MS											
Strontium-90	242	U	-0.0592	244	pCi/L		101	(75%-125%)	JXR1	06/27/1308:28	
	Uncert:		+/-0.130	+/-6.81							
	TPU:		+/-0.130	+/-20.7							
**Strontium Carrier	8.55	6.30		7.10	mg		83	(50%-105%)			

Notes:

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

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded
- J Value is estimated
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M M if above MDC and less than LLD
- M REMP Result > MDC/CL and < RDL
- N/A RPD or %Recovery limits do not apply.
- N1 See case narrative
- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- ^ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.

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QC Summary

Workorder: 327623

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

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

** Indicates analyte is a surrogate/tracer compound.

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

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

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