



## Legend

- Sample Location
- Existing Road
- Existing Pad  
Limit of Disturbance

**RGU 31-24-198**  
**Arsenic Background Sample Location Map**  
**T1S R98W, Section 24**

**August 15, 2013**





12065 Lebanon Rd.  
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1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

## Report Summary

Tuesday April 02, 2013

Report Number: L626745

Samples Received: 03/23/13

Client Project:

Description: RGU 31-24-198 Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

T. Alan Harvill , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

April 02, 2013

Date Received : March 23, 2013  
Description : RGU 31-24-198 Cuttings

ESC Sample # : L626745-01

Sample ID : RGU 31-24-198 PIT

Site ID :

Collected By :  
Collection Date : 03/20/13 12:00

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.011	0.0025	mg/kg	8021/8015	03/25/13	5
Toluene	0.026	0.025	mg/kg	8021/8015	03/25/13	5
Ethylbenzene	0.0045	0.0025	mg/kg	8021/8015	03/25/13	5
Total Xylene	0.032	0.0075	mg/kg	8021/8015	03/25/13	5
TPH (GC/FID) Low Fraction	1.2	0.50	mg/kg	GRO	03/25/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	101.		% Rec.	8021/8015	03/25/13	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	03/25/13	5
TPH (GC/FID) High Fraction	150	4.0	mg/kg	3546/DRO	04/01/13	1
Surrogate recovery(%)						
o-Terphenyl	257.		% Rec.	3546/DRO	04/01/13	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(a)anthracene	0.011	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Fluorene	0.012	0.0060	mg/kg	8270C-SIM	03/29/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Naphthalene	0.064	0.0060	mg/kg	8270C-SIM	03/29/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Surrogate Recovery						
Nitrobenzene-d5	62.8		% Rec.	8270C-SIM	03/29/13	1
2-Fluorobiphenyl	41.7		% Rec.	8270C-SIM	03/29/13	1
p-Terphenyl-d14	32.5		% Rec.	8270C-SIM	03/29/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/02/13 09:52 Revised: 04/02/13 16:01

L626745-01 (DRO) - Previous run also had high IS/SURR recovery. Matrix effect.



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April 02, 2013

Date Received : March 23, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198 PIT  
Collected By :  
Collection Date : 03/20/13 12:00

ESC Sample # : L626745-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	03/27/13	1
Chromium, Trivalent	7.6	2.0	mg/kg	Calc.	03/28/13	1
ORP	110		mV	2580 B-2011	03/27/13	1
pH	8.8		su	9045D	03/29/13	1
Sodium Adsorption Ratio	39.			Calc.	03/27/13	1
Specific Conductance	4300		umhos/cm	9050AMod	03/29/13	1
Mercury	BDL	0.020	mg/kg	7471	03/25/13	1
Arsenic	4.6	1.0	mg/kg	6010B	03/28/13	1
Barium	2700	0.25	mg/kg	6010B	03/28/13	1
Cadmium	0.62	0.25	mg/kg	6010B	03/28/13	1
Chromium	7.6	0.50	mg/kg	6010B	03/28/13	1
Copper	20.	1.0	mg/kg	6010B	03/28/13	1
Lead	8.6	0.25	mg/kg	6010B	03/28/13	1
Nickel	9.3	1.0	mg/kg	6010B	03/28/13	1
Selenium	BDL	1.0	mg/kg	6010B	03/28/13	1
Silver	BDL	0.50	mg/kg	6010B	03/28/13	1
Zinc	35.	1.5	mg/kg	6010B	03/28/13	1

BDL - Below Detection Limit

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Reported: 04/02/13 09:52 Revised: 04/02/13 16:01  
L626745-02 (PH) - 8.8@20.9c



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# REPORT OF ANALYSIS

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Parachute, CO 81635

April 02, 2013

Date Received : March 23, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198 CENTRIFUGE  
Collected By :  
Collection Date : 03/20/13 11:30

ESC Sample # : L626745-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.019	0.0025	mg/kg	8021/8015	03/25/13	5
Toluene	BDL	0.025	mg/kg	8021/8015	03/25/13	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	03/25/13	5
Total Xylene	0.017	0.0075	mg/kg	8021/8015	03/25/13	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	03/25/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	102.		% Rec.	8021/8015	03/25/13	5
a,a,a-Trifluorotoluene(PID)	101.		% Rec.	8021/8015	03/25/13	5
TPH (GC/FID) High Fraction	310	4.0	mg/kg	3546/DRO	04/01/13	1
Surrogate recovery(%)						
o-Terphenyl	1270		% Rec.	3546/DRO	04/01/13	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	0.016	0.0060	mg/kg	8270C-SIM	03/29/13	1
Acenaphthene	0.021	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(a)anthracene	0.041	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(b)fluoranthene	0.0086	0.0060	mg/kg	8270C-SIM	03/29/13	1
Benzo(k)fluoranthene	0.0093	0.0060	mg/kg	8270C-SIM	03/29/13	1
Chrysene	0.0072	0.0060	mg/kg	8270C-SIM	03/29/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Fluoranthene	0.011	0.0060	mg/kg	8270C-SIM	03/29/13	1
Fluorene	0.080	0.0060	mg/kg	8270C-SIM	03/29/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	03/29/13	1
Naphthalene	0.32	0.0060	mg/kg	8270C-SIM	03/29/13	1
Pyrene	0.016	0.0060	mg/kg	8270C-SIM	03/29/13	1
Surrogate Recovery						
Nitrobenzene-d5	71.7		% Rec.	8270C-SIM	03/29/13	1
2-Fluorobiphenyl	50.1		% Rec.	8270C-SIM	03/29/13	1
p-Terphenyl-d14	52.4		% Rec.	8270C-SIM	03/29/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 04/02/13 09:52 Revised: 04/02/13 16:01

L626745-03 (DRO) - Previous run also had high IS/SURR recovery. Matrix effect.



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1058 County Road 215  
Parachute, CO 81635

April 02, 2013

Date Received : March 23, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198 CENTRIFUGE  
Collected By :  
Collection Date : 03/20/13 11:30

ESC Sample # : L626745-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	03/27/13	1
Chromium, Trivalent	7.4	2.0	mg/kg	Calc.	03/27/13	1
ORP	-65.		mV	2580 B-2011	03/27/13	1
pH	9.1		su	9045D	03/29/13	1
Sodium Adsorption Ratio	15.			Calc.	03/27/13	1
Specific Conductance	2600		umhos/cm	9050AMod	03/29/13	1
Mercury	BDL	0.020	mg/kg	7471	03/25/13	1
Arsenic	BDL	1.0	mg/kg	6010B	03/27/13	1
Barium	6000	0.50	mg/kg	6010B	03/28/13	2
Cadmium	0.27	0.25	mg/kg	6010B	03/27/13	1
Chromium	7.4	0.50	mg/kg	6010B	03/27/13	1
Copper	19.	1.0	mg/kg	6010B	03/27/13	1
Lead	9.6	0.25	mg/kg	6010B	03/27/13	1
Nickel	9.3	1.0	mg/kg	6010B	03/28/13	1
Selenium	1.8	1.0	mg/kg	6010B	03/27/13	1
Silver	0.65	0.50	mg/kg	6010B	03/27/13	1
Zinc	42.	1.5	mg/kg	6010B	03/27/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 04/02/13 09:52 Revised: 04/02/13 16:01  
L626745-04 (PH) - 9.1@20.4c

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L626745-01	WG653696	SAMP	TPH (GC/FID) High Fraction	R2600337	J6J3
	WG653696	SAMP	o-Terphenyl	R2600337	J1
L626745-02	WG652723	SAMP	Arsenic	R2598601	P1
	WG652723	SAMP	Barium	R2598601	J3V
	WG652723	SAMP	Lead	R2598601	B
	WG652566	SAMP	Chromium, Hexavalent	R2596738	J6J3
L626745-03	WG653696	SAMP	o-Terphenyl	R2600337	J1
L626745-04	WG653322	SAMP	Barium	R2597338	V

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
B	(EPA) - The indicated compound was found in the associated method blank as well as the laboratory sample.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.





YOUR LAB OF CHOICE

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Parachute, CO 81635

Quality Assurance Report  
Level II

L626745

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April 02, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG652628	03/25/13 08:25
Chromium, Hexavalent	< 2	mg/kg			WG652566	03/27/13 13:39
Arsenic	< 1	mg/kg			WG652934	03/27/13 18:50
Cadmium	< .25	mg/kg			WG652934	03/27/13 18:50
Chromium	< .5	mg/kg			WG652934	03/27/13 18:50
Copper	< 1	mg/kg			WG652934	03/27/13 18:50
Lead	< .25	mg/kg			WG652934	03/27/13 18:50
Selenium	< 1	mg/kg			WG652934	03/27/13 18:50
Silver	< .5	mg/kg			WG652934	03/27/13 18:50
Zinc	< 1.5	mg/kg			WG652934	03/27/13 18:50
Barium	< .25	mg/kg			WG653322	03/28/13 01:52
Benzene	< .0005	mg/kg			WG652713	03/25/13 14:28
Ethylbenzene	< .0005	mg/kg			WG652713	03/25/13 14:28
Toluene	< .005	mg/kg			WG652713	03/25/13 14:28
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG652713	03/25/13 14:28
Total Xylene	< .0015	mg/kg			WG652713	03/25/13 14:28
a,a,a-Trifluorotoluene(FID)		% Rec.	101.4	59-128	WG652713	03/25/13 14:28
a,a,a-Trifluorotoluene(PID)		% Rec.	101.3	54-144	WG652713	03/25/13 14:28
Acenaphthene	< .006	mg/kg			WG652764	03/28/13 14:07
Anthracene	< .006	mg/kg			WG652764	03/28/13 14:07
Benzo(a)anthracene	< .006	mg/kg			WG652764	03/28/13 14:07
Benzo(a)pyrene	< .006	mg/kg			WG652764	03/28/13 14:07
Benzo(b)fluoranthene	< .006	mg/kg			WG652764	03/28/13 14:07
Benzo(k)fluoranthene	< .006	mg/kg			WG652764	03/28/13 14:07
Chrysene	< .006	mg/kg			WG652764	03/28/13 14:07
Dibenz(a,h)anthracene	< .006	mg/kg			WG652764	03/28/13 14:07
Fluoranthene	< .006	mg/kg			WG652764	03/28/13 14:07
Fluorene	< .006	mg/kg			WG652764	03/28/13 14:07
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG652764	03/28/13 14:07
Naphthalene	< .006	mg/kg			WG652764	03/28/13 14:07
Pyrene	< .006	mg/kg			WG652764	03/28/13 14:07
2-Fluorobiphenyl		% Rec.	75.50	26.1-136	WG652764	03/28/13 14:07
Nitrobenzene-d5		% Rec.	80.10	12.7-142	WG652764	03/28/13 14:07
p-Terphenyl-d14		% Rec.	88.30	20.5-158	WG652764	03/28/13 14:07
Nickel	< 1	mg/kg			WG652934	03/28/13 18:20
Arsenic	< 1	mg/kg			WG652723	03/28/13 06:09
Barium	< .25	mg/kg			WG652723	03/28/13 06:09
Cadmium	< .25	mg/kg			WG652723	03/28/13 06:09
Chromium	< .5	mg/kg			WG652723	03/28/13 06:09
Copper	< 1	mg/kg			WG652723	03/28/13 06:09
Lead	0.320	mg/kg			WG652723	03/28/13 06:09
Nickel	< 1	mg/kg			WG652723	03/28/13 06:09
Selenium	< 1	mg/kg			WG652723	03/28/13 06:09
Silver	< .5	mg/kg			WG652723	03/28/13 06:09
Zinc	< 1.5	mg/kg			WG652723	03/28/13 21:25

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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April 02, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Specific Conductance	1.32	umhos/cm			WG653299	03/29/13 11:30

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Mercury	mg/kg	0.0470	0.0474	0.896	20	L626737-11	WG652628
Chromium, Hexavalent	mg/kg	0	0	0	20	L626078-21	WG652566
ORP	mV	0	0	0	20	L626078-16	WG653061
ORP	mV	60.0	58.0	3.39	20	L626827-01	WG653061
Arsenic	mg/kg	5.20	5.00	3.92	20	L626755-01	WG652934
Cadmium	mg/kg	0	0.272	NA	20	L626755-01	WG652934
Chromium	mg/kg	18.0	18.1	0.554	20	L626755-01	WG652934
Copper	mg/kg	13.0	12.6	3.13	20	L626755-01	WG652934
Selenium	mg/kg	3.10	2.82	9.46	20	L626755-01	WG652934
Zinc	mg/kg	60.0	59.6	0.669	20	L626755-01	WG652934
Lead	mg/kg	16.0	0	NA	20	L626755-01	WG652934
Silver	mg/kg	0	0	0	20	L626755-01	WG652934
Barium	mg/kg	5600	6000	6.90	20	L626745-04	WG653322
Nickel	mg/kg	15.0	0	NA	20	L626755-01	WG652934
Arsenic	mg/kg	3.70	4.60	21.7*	20	L626745-02	WG652723
Barium	mg/kg	3600	2700	28.6*	20	L626745-02	WG652723
Cadmium	mg/kg	0.560	0.620	10.2	20	L626745-02	WG652723
Chromium	mg/kg	7.40	7.60	2.67	20	L626745-02	WG652723
Copper	mg/kg	19.0	20.0	5.13	20	L626745-02	WG652723
Lead	mg/kg	8.70	8.60	1.16	20	L626745-02	WG652723
Nickel	mg/kg	8.90	9.30	4.40	20	L626745-02	WG652723
Selenium	mg/kg	0	0	0	20	L626745-02	WG652723
Silver	mg/kg	0	0	0	20	L626745-02	WG652723
Zinc	mg/kg	34.0	35.0	2.90	20	L626745-02	WG652723
Specific Conductance	umhos/cm	940.	950.	1.48	20	L626673-01	WG653299
pH	su	8.40	8.40	0.358	1	L626677-01	WG653442
pH	su	7.30	7.30	0	1	L627389-01	WG653442

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	12.4	15.3	124.	71.6-127.7	WG652628
Chromium, Hexavalent	mg/kg	146	150.	103.	80-120	WG652566
ORP	mV	228	226.	99.1	95.6-104.	WG653061

\* Performance of this Analyte is outside of established criteria.  
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

WPX Energy  
Karolina Blaney  
1058 County Road 215

Parachute, CO 81635

Quality Assurance Report  
Level II

L626745

12065 Lebanon Rd.  
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(615) 758-5858  
1-800-767-5859  
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

April 02, 2013

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Arsenic	mg/kg	237	264.	111.	83.1-117	WG652934
Cadmium	mg/kg	191	207.	108.	83.2-117	WG652934
Chromium	mg/kg	128	145.	113.	81.3-118	WG652934
Copper	mg/kg	123	140.	114.	83.7-116	WG652934
Lead	mg/kg	103	118.	115.	83.1-117	WG652934
Selenium	mg/kg	110	126.	115.	78.7-122	WG652934
Silver	mg/kg	47.3	53.7	114.	66.2-134	WG652934
Zinc	mg/kg	183	204.	111.	82-118	WG652934
Barium	mg/kg	252	269.	107.	84.1-116	WG653322
Benzene	mg/kg	.05	0.0502	100.	76-113	WG652713
Ethylbenzene	mg/kg	.05	0.0511	102.	78-115	WG652713
Toluene	mg/kg	.05	0.0503	101.	76-114	WG652713
Total Xylene	mg/kg	.15	0.157	104.	81-118	WG652713
a,a,a-Trifluorotoluene(PID)				103.2	54-144	WG652713
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.17	112.	67-135	WG652713
a,a,a-Trifluorotoluene(FID)				102.6	59-128	WG652713
Acenaphthene	mg/kg	.033	0.0265	80.3	50.3-102	WG652764
Anthracene	mg/kg	.033	0.0270	81.9	55-110	WG652764
Benzo(a)anthracene	mg/kg	.033	0.0274	83.1	56.1-112	WG652764
Benzo(a)pyrene	mg/kg	.033	0.0292	88.6	55.3-114	WG652764
Benzo(b)fluoranthene	mg/kg	.033	0.0287	87.0	55.3-116	WG652764
Benzo(k)fluoranthene	mg/kg	.033	0.0307	93.1	57-113	WG652764
Chrysene	mg/kg	.033	0.0304	92.1	56.9-113	WG652764
Dibenz(a,h)anthracene	mg/kg	.033	0.0306	92.8	51.6-122	WG652764
Fluoranthene	mg/kg	.033	0.0285	86.3	56.6-112	WG652764
Fluorene	mg/kg	.033	0.0269	81.4	53.3-106	WG652764
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0296	89.7	52.1-122	WG652764
Naphthalene	mg/kg	.033	0.0240	72.7	43.9-98	WG652764
Pyrene	mg/kg	.033	0.0298	90.3	54.3-112	WG652764
2-Fluorobiphenyl				76.00	26.1-136	WG652764
Nitrobenzene-d5				76.80	12.7-142	WG652764
p-Terphenyl-d14				89.40	20.5-158	WG652764
Nickel	mg/kg	118	128.	108.	82-118	WG652934
Arsenic	mg/kg	237	265.	112.	83.1-117	WG652723
Barium	mg/kg	252	277.	110.	84.1-116	WG652723
Cadmium	mg/kg	191	204.	107.	83.2-117	WG652723
Chromium	mg/kg	128	137.	107.	81.3-118	WG652723
Copper	mg/kg	123	138.	112.	83.7-116	WG652723
Lead	mg/kg	103	112.	109.	83.1-117	WG652723
Nickel	mg/kg	118	124.	105.	82-118	WG652723
Selenium	mg/kg	110	122.	111.	78.7-122	WG652723
Silver	mg/kg	47.3	48.7	103.	66.2-134	WG652723
Zinc	mg/kg	183	192.	105.	82-118	WG652723
Specific Conductance	umhos/cm	878	868.	98.9	85-115	WG653299
pH	su	5.79	5.82	101.	98.3-101.7	WG653442

\* Performance of this Analyte is outside of established criteria.

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Est. 1970

April 02, 2013

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chromium, Hexavalent	mg/kg	150.	150.	103.	80-120	0	20	WG652566
ORP	mV	226.	226.	99.0	95.6-104.	0	20	WG653061
Benzene	mg/kg	0.0513	0.0502	102.	76-113	2.16	20	WG652713
Ethylbenzene	mg/kg	0.0519	0.0511	104.	78-115	1.59	20	WG652713
Toluene	mg/kg	0.0512	0.0503	102.	76-114	1.69	20	WG652713
Total Xylene	mg/kg	0.159	0.157	106.	81-118	1.50	20	WG652713
a,a,a-Trifluorotoluene (PID)				103.4	54-144			WG652713
TPH (GC/FID) Low Fraction	mg/kg	6.33	6.17	115.	67-135	2.58	20	WG652713
a,a,a-Trifluorotoluene (FID)				103.1	59-128			WG652713
Acenaphthene	mg/kg	0.0273	0.0265	83.0	50.3-102	3.15	20	WG652764
Anthracene	mg/kg	0.0298	0.0270	90.0	55-110	9.64	20	WG652764
Benzo(a)anthracene	mg/kg	0.0282	0.0274	86.0	56.1-112	2.92	20	WG652764
Benzo(a)pyrene	mg/kg	0.0297	0.0292	90.0	55.3-114	1.38	20	WG652764
Benzo(b)fluoranthene	mg/kg	0.0312	0.0287	94.0	55.3-116	8.26	20	WG652764
Benzo(k)fluoranthene	mg/kg	0.0305	0.0307	92.0	57-113	0.670	20	WG652764
Chrysene	mg/kg	0.0303	0.0304	92.0	56.9-113	0.290	20	WG652764
Dibenz(a,h)anthracene	mg/kg	0.0302	0.0306	91.0	51.6-122	1.51	20	WG652764
Fluoranthene	mg/kg	0.0303	0.0285	92.0	56.6-112	6.32	20	WG652764
Fluorene	mg/kg	0.0283	0.0269	86.0	53.3-106	5.27	20	WG652764
Indeno(1,2,3-cd)pyrene	mg/kg	0.0298	0.0296	90.0	52.1-122	0.760	20	WG652764
Naphthalene	mg/kg	0.0257	0.0240	78.0	43.9-98	6.94	20	WG652764
Pyrene	mg/kg	0.0308	0.0298	93.0	54.3-112	3.37	20	WG652764
2-Fluorobiphenyl				78.80	26.1-136			WG652764
Nitrobenzene-d5				81.40	12.7-142			WG652764
p-Terphenyl-d14				89.30	20.5-158			WG652764
Specific Conductance	umhos/	866.	868.	99.0	85-115	0.231	20	WG653299
pH	su	5.83	5.82	101.	98.3-101.7	0.172	20	WG653442

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Mercury	mg/kg	0.314	0.0474	.25	106.	80-120	L626737-11	WG652628
Chromium, Hexavalent	mg/kg	1.96	0	20	9.80*	75-125	L626745-02	WG652566
Arsenic	mg/kg	58.7	5.00	50	107.	75-125	L626755-01	WG652934
Cadmium	mg/kg	54.0	0.272	50	107.	75-125	L626755-01	WG652934
Chromium	mg/kg	70.8	18.1	50	105.	75-125	L626755-01	WG652934
Copper	mg/kg	66.9	12.6	50	109.	75-125	L626755-01	WG652934
Selenium	mg/kg	56.5	2.82	50	107.	75-125	L626755-01	WG652934
Zinc	mg/kg	112.	59.6	50	105.	75-125	L626755-01	WG652934
Lead	mg/kg	67.6	0	25	135.*	75-125	L626755-01	WG652934
Silver	mg/kg	51.6	0	25	103.	75-125	L626755-01	WG652934
Barium	mg/kg	5390	6000	50	0*	75-125	L626745-04	WG653322

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Benzene	mg/kg	0.233	0	.05	93.1	32-137	L626665-01	WG652713
Ethylbenzene	mg/kg	0.225	0	.05	90.1	10-150	L626665-01	WG652713
Toluene	mg/kg	0.229	0	.05	91.6	20-142	L626665-01	WG652713
Total Xylene	mg/kg	0.691	0	.15	92.1	16-141	L626665-01	WG652713
a,a,a-Trifluorotoluene(PID)					102.2	54-144		WG652713
TPH (GC/FID) Low Fraction	mg/kg	28.4	0.0634	5.5	103.	55-109	L626665-01	WG652713
a,a,a-Trifluorotoluene(FID)					102.6	59-128		WG652713
Acenaphthene	mg/kg	0.0246	0	.033	74.4	30.4-133	L626545-13	WG652764
Anthracene	mg/kg	0.0273	0	.033	82.7	24.8-145	L626545-13	WG652764
Benzo(a)anthracene	mg/kg	0.0274	0.000629	.033	81.0	17.4-147	L626545-13	WG652764
Benzo(a)pyrene	mg/kg	0.0285	0	.033	86.2	14.5-149	L626545-13	WG652764
Benzo(b)fluoranthene	mg/kg	0.0287	0	.033	87.1	17-151	L626545-13	WG652764
Benzo(k)fluoranthene	mg/kg	0.0285	0	.033	86.5	14.8-150	L626545-13	WG652764
Chrysene	mg/kg	0.0289	0	.033	87.7	15.7-148	L626545-13	WG652764
Dibenz(a,h)anthracene	mg/kg	0.0288	0	.033	87.2	10-142	L626545-13	WG652764
Fluoranthene	mg/kg	0.0285	0	.033	86.2	22.9-153	L626545-13	WG652764
Fluorene	mg/kg	0.0259	0	.033	78.4	28.9-140	L626545-13	WG652764
Indeno(1,2,3-cd)pyrene	mg/kg	0.0285	0	.033	86.5	10-155	L626545-13	WG652764
Naphthalene	mg/kg	0.0215	0	.033	65.2	19.5-137	L626545-13	WG652764
Pyrene	mg/kg	0.0284	0	.033	86.1	18.4-146	L626545-13	WG652764
2-Fluorobiphenyl					70.10	26.1-136		WG652764
Nitrobenzene-d5					69.10	12.7-142		WG652764
p-Terphenyl-d14					83.90	20.5-158		WG652764
Nickel	mg/kg	69.7	0	50	139.*	75-125	L626755-01	WG652934
Arsenic	mg/kg	63.3	4.60	50	117.	75-125	L626745-02	WG652723
Barium	mg/kg	3630	2700	50	1860*	75-125	L626745-02	WG652723
Cadmium	mg/kg	55.7	0.620	50	110.	75-125	L626745-02	WG652723
Chromium	mg/kg	67.9	7.60	50	121.	75-125	L626745-02	WG652723
Copper	mg/kg	77.7	20.0	50	115.	75-125	L626745-02	WG652723
Lead	mg/kg	65.1	8.60	50	113.	75-125	L626745-02	WG652723
Nickel	mg/kg	61.7	9.30	50	105.	75-125	L626745-02	WG652723
Selenium	mg/kg	60.9	0	50	122.	75-125	L626745-02	WG652723
Silver	mg/kg	52.7	0	50	105.	75-125	L626745-02	WG652723
Zinc	mg/kg	83.4	35.0	50	96.8	75-125	L626745-02	WG652723
TPH (GC/FID) High Fraction	mg/kg	210.	150.	60	100.	50-150	L626745-01	WG653696
o-Terphenyl					221.0*	50-150		WG653696

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.320	0.314	109.	80-120	1.95	20	L626737-11	WG652628
Chromium, Hexavalent	mg/kg	3.24	1.96	16.2*	75-125	49.2*	20	L626745-02	WG652566
Arsenic	mg/kg	58.0	58.7	106.	75-125	1.20	20	L626755-01	WG652934
Cadmium	mg/kg	54.1	54.0	108.	75-125	0.185	20	L626755-01	WG652934
Chromium	mg/kg	70.5	70.8	105.	75-125	0.425	20	L626755-01	WG652934
Copper	mg/kg	67.2	66.9	109.	75-125	0.447	20	L626755-01	WG652934

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Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Selenium	mg/kg	55.9	56.5	106.	75-125	1.07	20	L626755-01	WG652934
Zinc	mg/kg	112.	112.	105.	75-125	0	20	L626755-01	WG652934
Lead	mg/kg	68.5	67.6	137.*	75-125	1.32	20	L626755-01	WG652934
Silver	mg/kg	50.7	51.6	101.	75-125	1.76	20	L626755-01	WG652934
Barium	mg/kg	6060	5390	60.0*	75-125	11.7	20	L626745-04	WG653322
Benzene	mg/kg	0.245	0.233	98.2	32-137	5.26	39	L626665-01	WG652713
Ethylbenzene	mg/kg	0.238	0.225	95.2	10-150	5.59	44	L626665-01	WG652713
Toluene	mg/kg	0.240	0.229	95.9	20-142	4.58	42	L626665-01	WG652713
Total Xylene	mg/kg	0.727	0.691	96.9	16-141	5.06	46	L626665-01	WG652713
a,a,a-Trifluorotoluene(PID)				102.5	54-144				WG652713
TPH (GC/FID) Low Fraction	mg/kg	28.9	28.4	105.	55-109	1.49	20	L626665-01	WG652713
a,a,a-Trifluorotoluene(FID)				102.6	59-128				WG652713
Acenaphthene	mg/kg	0.0253	0.0246	76.6	30.4-133	2.94	27.6	L626545-13	WG652764
Anthracene	mg/kg	0.0283	0.0273	85.9	24.8-145	3.81	30	L626545-13	WG652764
Benzo(a)anthracene	mg/kg	0.0274	0.0274	81.2	17.4-147	0.280	29.9	L626545-13	WG652764
Benzo(a)pyrene	mg/kg	0.0291	0.0285	88.3	14.5-149	2.39	30.9	L626545-13	WG652764
Benzo(b)fluoranthene	mg/kg	0.0286	0.0287	86.8	17-151	0.330	34.6	L626545-13	WG652764
Benzo(k)fluoranthene	mg/kg	0.0293	0.0285	88.8	14.8-150	2.69	34.5	L626545-13	WG652764
Chrysene	mg/kg	0.0285	0.0289	86.5	15.7-148	1.39	30.5	L626545-13	WG652764
Dibenz(a,h)anthracene	mg/kg	0.0296	0.0288	89.8	10-142	3.01	34.8	L626545-13	WG652764
Fluoranthene	mg/kg	0.0295	0.0285	89.5	22.9-153	3.71	32.8	L626545-13	WG652764
Fluorene	mg/kg	0.0259	0.0259	78.5	28.9-140	0.110	30	L626545-13	WG652764
Indeno(1,2,3-cd)pyrene	mg/kg	0.0290	0.0285	87.7	10-155	1.40	36.2	L626545-13	WG652764
Naphthalene	mg/kg	0.0226	0.0215	68.4	19.5-137	4.79	33	L626545-13	WG652764
Pyrene	mg/kg	0.0292	0.0284	88.4	18.4-146	2.70	33.5	L626545-13	WG652764
2-Fluorobiphenyl				70.90	26.1-136				WG652764
Nitrobenzene-d5				72.70	12.7-142				WG652764
p-Terphenyl-d14				86.40	20.5-158				WG652764
Nickel	mg/kg	65.8	69.7	132.*	75-125	5.76	20	L626755-01	WG652934
Arsenic	mg/kg	59.0	63.3	109.	75-125	7.03	20	L626745-02	WG652723
Barium	mg/kg	2630	3630	0*	75-125	31.9*	20	L626745-02	WG652723
Cadmium	mg/kg	49.5	55.7	97.8	75-125	11.8	20	L626745-02	WG652723
Chromium	mg/kg	62.6	67.9	110.	75-125	8.12	20	L626745-02	WG652723
Copper	mg/kg	73.3	77.7	107.	75-125	5.83	20	L626745-02	WG652723
Lead	mg/kg	59.2	65.1	101.	75-125	9.49	20	L626745-02	WG652723
Nickel	mg/kg	57.7	61.7	96.8	75-125	6.70	20	L626745-02	WG652723
Selenium	mg/kg	54.2	60.9	108.	75-125	11.6	20	L626745-02	WG652723
Silver	mg/kg	47.5	52.7	95.0	75-125	10.4	20	L626745-02	WG652723
Zinc	mg/kg	87.8	83.4	106.	75-125	5.14	20	L626745-02	WG652723
TPH (GC/FID) High Fraction	mg/kg	166.	210.	26.1*	50-150	23.7*	20	L626745-01	WG653696
o-Terphenyl				232.0*	50-150				WG653696

Serial Dilution

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Batch number /Run number / Sample number cross reference

WG652628: R2594759: L626745-02 04  
WG652566: R2596738: L626745-02 04  
WG653061: R2596760: L626745-02 04  
WG652934: R2597161: L626745-04  
WG653322: R2597338: L626745-04  
WG652713: R2597519: L626745-01 03  
WG652764: R2598078: L626745-01 03  
WG652897: R2598518: L626745-02 04  
WG652723: R2598601: L626745-02  
WG653299: R2599060: L626745-02 04  
WG653442: R2599278: L626745-02 04  
WG653696: R2600337: L626745-01 03

\* \* Calculations are performed prior to rounding of reported values.

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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.





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Est. 1970

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

## Report Summary

Friday August 02, 2013

Report Number: L649155

Samples Received: 07/30/13

Client Project:

Description: RGU 31-24-198 Cuttings

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

T. Alan Harvill , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,  
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,  
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,  
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,  
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

August 02, 2013

Date Received : July 30, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198-B-1  
Collected By : Reed W  
Collection Date : 07/29/13 11:35

ESC Sample # : L649155-01

Site ID : RGU 31-24-198

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	7.4	1.0	mg/kg	6010B	08/01/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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# REPORT OF ANALYSIS

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

August 02, 2013

Date Received : July 30, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198-B-2  
Collected By : Reed W  
Collection Date : 07/29/13 11:40

ESC Sample # : L649155-02

Site ID : RGU 31-24-198

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	13.	1.0	mg/kg	6010B	08/01/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Karolina Blaney  
WPX Energy  
1058 County Road 215  
Parachute, CO 81635

August 02, 2013

Date Received : July 30, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198-B-3  
Collected By : Reed W  
Collection Date : 07/29/13 11:45

ESC Sample # : L649155-03  
Site ID : RGU 31-24-198  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.2	1.0	mg/kg	6010B	08/01/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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REPORT OF ANALYSIS

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Parachute, CO 81635

August 02, 2013

Date Received : July 30, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198-B-4  
Collected By : Reed W  
Collection Date : 07/29/13 11:50

ESC Sample # : L649155-04  
Site ID : RGU 31-24-198  
Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	5.4	1.0	mg/kg	6010B	08/01/13	1

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
Note:  
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# REPORT OF ANALYSIS

August 02, 2013

Karolina Blaney  
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1058 County Road 215  
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Date Received : July 30, 2013  
Description : RGU 31-24-198 Cuttings  
Sample ID : RGU 31-24-198-B-5  
Collected By : Reed W  
Collection Date : 07/29/13 11:55

ESC Sample # : L649155-05

Site ID : RGU 31-24-198

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Arsenic	4.7	1.0	mg/kg	6010B	08/01/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Karolina Blaney  
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Quality Assurance Report  
Level II

L649155

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		Laboratory Blank							
Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed			
Arsenic	< 1	mg/kg			WG674617	08/01/13	20:36		
Duplicate									
Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch		
Arsenic	mg/kg	7.00	5.59	22.4*	20	L649162-01	WG674617		
Laboratory Control Sample									
Analyte	Units	Known Val	Sample Result	% Rec	Limit	Batch			
Arsenic	mg/kg	237	238.	100.	83.1-117	WG674617			
Matrix Spike									
Analyte	Units	MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch	
Arsenic	mg/kg	60.0	5.59	50	109.	75-125	L649162-01	WG674617	
Matrix Spike Duplicate									
Analyte	Units	MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Arsenic	mg/kg	58.7	60.0	106.	75-125	2.19	20	L649162-01	WG674617

Batch number /Run number / Sample number cross reference

WG674617: R2766621: L649155-01 02 03 04 05

\* \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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August 02, 2013

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.