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Durango, CO 81303
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19 December 2018

Steve Moskal
BP America
380 Airport Rd.
Durango, CO 81303
RE: API

Enclosed are the results of analyses for samples received by the laboratory on 12/07/18 09:10. The data to follow was performed, in whole or in part, by a subcontract laboratory with an additional report attached.

If you any any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads 'Debbie Zufelt'. The script is cursive and fluid, with the first name 'Debbie' and last name 'Zufelt' clearly legible.

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water through the Colorado Department of Public Health and Environment and EPA region 8.



BP America
380 Airport Rd.
Durango CO, 81303

Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
WS01	1812061-01	Water	12/06/18 16:50	12/07/18 09:10	
WS02	1812061-02	Water	12/06/18 17:00	12/07/18 09:10	

Green Analytical Laboratories

A handwritten signature in black ink that reads 'Debbie Zufelt'.

Debbie Zufelt, Reports Manager

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Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

WS01

1812061-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate as CaCO ₃ *	780	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Carbonate as CaCO ₃ *	<10.0	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Hydroxide as CaCO ₃ *	<10.0	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Total as CaCO ₃ *	780	10.0		mg/L	10	12/17/18	2320 B		JDA
Chloride*	84.5	2.00	0.205	mg/L	2	12/13/18	EPA300.0		LLG
Conductivity*	2000	10.0		uS/cm	1	12/07/18	2510 B		JDA
pH*	7.88			pH Units	1	12/07/18	EPA150.1		JDA
Resistivity	499			ohm/cm	1	12/12/18	2510 B		JDA
Total Dissolved Solids*	1160	10.0		mg/L	1	12/12/18	EPA160.1		JDA
Specific Gravity	1.003	0.8000		No Unit	1	12/12/18	ASTM D1429-03		JDA
Sulfate*	<2.00	2.00	0.426	mg/L	2	12/13/18	EPA300.0		LLG

Total Recoverable Metals by ICP (E200.7)

Iron*	4.34	0.050	0.017	mg/L	1	12/13/18	EPA200.7		AES
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Dissolved Metals by ICP

Hardness	49.2	1.32	0.219	mg/L	2	12/11/18	2340 B		AES
Barium*	0.491	0.040	0.004	mg/L	2	12/11/18	EPA200.7		AES
Calcium*	16.0	0.200	0.026	mg/L	2	12/11/18	EPA200.7		AES
Iron*	<0.100	0.100	0.055	mg/L	2	12/11/18	EPA200.7		AES
Magnesium*	2.24	0.200	0.038	mg/L	2	12/11/18	EPA200.7		AES
Manganese*	<0.040	0.040	0.005	mg/L	2	12/11/18	EPA200.7		AES
Potassium*	3.67	2.00	0.191	mg/L	2	12/11/18	EPA200.7		AES
Sodium*	421	2.00	0.734	mg/L	2	12/11/18	EPA200.7		AES
Strontium*	0.427	0.200	0.006	mg/L	2	12/11/18	EPA200.7		AES

Subcontracted -- Cardinal Laboratories

Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.001	0.001	0.00007	mg/L	1	12/18/18	8021B		ms
Toluene*	<0.001	0.001	0.00005	mg/L	1	12/18/18	8021B		ms
Ethylbenzene*	<0.001	0.001	0.0001	mg/L	1	12/18/18	8021B		ms
Total Xylenes*	<0.003	0.003	0.0002	mg/L	1	12/18/18	8021B		ms
Total BTEX	<0.006	0.006	0.0005	mg/L	1	12/18/18	8021B		ms

Surrogate: 4-Bromofluorobenzene (PID)

103 % 81.3-128

12/18/18

8021B

ms

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Debbie Zufelt, Reports Manager

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Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

WS01

1812061-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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Subcontracted -- Cardinal Laboratories

Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<1.00	1.00	0.0601	mg/L	0.1	12/17/18	8015B		MS
DRO >C10-C28*	3.79	1.00	0.164	mg/L	0.1	12/17/18	8015B		MS
EXT DRO >C28-C36	1.01	1.00	0.164	mg/L	0.1	12/17/18	8015B		MS
Surrogate: 1-Chlorooctane			93.7 %	37.1-138		12/17/18	8015B		MS
Surrogate: 1-Chlorooctadecane			114 %	44.6-151		12/17/18	8015B		MS
Cation/Anion Balance	3.92								

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Reported:
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WS02

1812061-02 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate as CaCO ₃ *	800	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Carbonate as CaCO ₃ *	100	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Hydroxide as CaCO ₃ *	<10.0	10.0		mg/L	10	12/17/18	2320 B		JDA
Alkalinity, Total as CaCO ₃ *	900	10.0		mg/L	10	12/17/18	2320 B		JDA
Chloride*	97.5	2.00	0.205	mg/L	2	12/14/18	EPA300.0		LLG
Conductivity*	1980	10.0		uS/cm	1	12/07/18	2510 B		JDA
pH*	8.36			pH Units	1	12/07/18	EPA150.1		JDA
Resistivity	506			ohm/cm	1	12/12/18	2510 B		JDA
Total Dissolved Solids*	1240	10.0		mg/L	1	12/12/18	EPA160.1		JDA
Specific Gravity	1.002	0.8000		No Unit	1	12/12/18	ASTM D1429-03		JDA
Sulfate*	<2.00	2.00	0.426	mg/L	2	12/14/18	EPA300.0		LLG

Total Recoverable Metals by ICP (E200.7)

Iron*	11.7	0.050	0.017	mg/L	1	12/13/18	EPA200.7		AES
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Dissolved Metals by ICP

Hardness	54.1	1.32	0.219	mg/L	2	12/11/18	2340 B		AES
Barium*	0.208	0.040	0.004	mg/L	2	12/11/18	EPA200.7		AES
Calcium*	17.6	0.200	0.026	mg/L	2	12/11/18	EPA200.7		AES
Iron*	0.218	0.100	0.055	mg/L	2	12/11/18	EPA200.7		AES
Magnesium*	2.45	0.200	0.038	mg/L	2	12/11/18	EPA200.7		AES
Manganese*	<0.040	0.040	0.005	mg/L	2	12/11/18	EPA200.7		AES
Potassium*	4.47	2.00	0.191	mg/L	2	12/11/18	EPA200.7		AES
Sodium*	424	2.00	0.734	mg/L	2	12/11/18	EPA200.7		AES
Strontium*	0.262	0.200	0.006	mg/L	2	12/11/18	EPA200.7		AES

Subcontracted -- Cardinal Laboratories

Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.001	0.001	0.00007	mg/L	1	12/18/18	8021B		ms
Toluene*	<0.001	0.001	0.00005	mg/L	1	12/18/18	8021B		ms
Ethylbenzene*	<0.001	0.001	0.0001	mg/L	1	12/18/18	8021B		ms
Total Xylenes*	<0.003	0.003	0.0002	mg/L	1	12/18/18	8021B		ms
Total BTEX	<0.006	0.006	0.0005	mg/L	1	12/18/18	8021B		ms

Surrogate: 4-Bromofluorobenzene (PID)

103 % 81.3-128

12/18/18

8021B

ms

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Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

WS02

1812061-02 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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Subcontracted -- Cardinal Laboratories

Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<1.00	1.00	0.0601	mg/L	0.1	12/17/18	8015B		MS
DRO >C10-C28*	<1.00	1.00	0.164	mg/L	0.1	12/17/18	8015B		MS
EXT DRO >C28-C36	<1.00	1.00	0.164	mg/L	0.1	12/17/18	8015B		MS
Surrogate: 1-Chlorooctane			101 %	37.1-138		12/17/18	8015B		MS
Surrogate: 1-Chlorooctadecane			119 %	44.6-151		12/17/18	8015B		MS
Cation/Anion Balance	-2.26								

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Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B812043 - General Prep - Wet Chem

Duplicate (B812043-DUP1)

Source: 1812031-01

Prepared & Analyzed: 12/07/18

Conductivity	710	10.0	uS/cm		707			0.423	20	
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Reference (B812043-SRM1)

Prepared & Analyzed: 12/07/18

Conductivity	503	10.0	uS/cm	491		102	90-110.1			
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Batch B812044 - General Prep - Wet Chem

Duplicate (B812044-DUP2)

Source: 1812046-03

Prepared & Analyzed: 12/07/18

pH	7.29		pH Units		7.28			0.137	20	
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Reference (B812044-SRM1)

Prepared & Analyzed: 12/07/18

pH	9.08		pH Units	9.13		99.5	97.8-102.2			
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Batch B812065 - General Prep - Wet Chem

Blank (B812065-BLK1)

Prepared: 12/11/18 Analyzed: 12/12/18

Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							

LCS (B812065-BS1)

Prepared: 12/11/18 Analyzed: 12/13/18

Chloride	23.5	1.00	mg/L	25.0		94.0	90-110			
Sulfate	22.5	1.00	mg/L	25.0		90.0	90-110			

LCS Dup (B812065-BSD1)

Prepared: 12/11/18 Analyzed: 12/12/18

Chloride	23.7	1.00	mg/L	25.0		94.7	90-110	0.750	20	
Sulfate	24.2	1.00	mg/L	25.0		96.8	90-110	7.29	20	

Batch B812070 - General Prep - Wet Chem

Duplicate (B812070-DUP1)

Source: 1812061-02

Prepared & Analyzed: 12/12/18

Specific Gravity	1.002	0.8000	No Unit		1.002			0.00	20	
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Batch B812072 - General Prep - Wet Chem

Blank (B812072-BLK1)

Prepared & Analyzed: 12/12/18

Total Dissolved Solids	ND	10.0	mg/L							
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Duplicate (B812072-DUP1)

Source: 1812034-01

Prepared & Analyzed: 12/12/18

Total Dissolved Solids	120	10.0	mg/L		125			4.05	20	
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Reference (B812072-SRM1)

Prepared & Analyzed: 12/12/18

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BP America
380 Airport Rd.
Durango CO, 81303Project: API
Project Name / Number: Richardson G2
Project Manager: Steve MoskalReported:
12/19/18 15:57**General Chemistry - Quality Control
(Continued)**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B812072 - General Prep - Wet Chem (Continued)**Reference (B812072-SRM1) (Continued)**

Prepared & Analyzed: 12/12/18

Total Dissolved Solids	350	10.0	mg/L	380	92.1	85-115
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Batch B812090 - General Prep - Wet Chem**Blank (B812090-BLK1)**

Prepared: 12/13/18 Analyzed: 12/14/18

Chloride	ND	1.00	mg/L
Sulfate	ND	1.00	mg/L

LCS (B812090-BS1)

Prepared: 12/13/18 Analyzed: 12/14/18

Chloride	23.6	1.00	mg/L	25.0	94.5	90-110
Sulfate	23.7	1.00	mg/L	25.0	95.0	90-110

LCS Dup (B812090-BSD1)

Prepared: 12/13/18 Analyzed: 12/14/18

Chloride	23.9	1.00	mg/L	25.0	95.4	90-110	1.00	20
Sulfate	24.1	1.00	mg/L	25.0	96.4	90-110	1.47	20

Batch B812110 - General Prep - Wet Chem**Blank (B812110-BLK1)**

Prepared & Analyzed: 12/17/18

Alkalinity, Total as CaCO ₃	ND	10.0	mg/L
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LCS (B812110-BS1)

Prepared & Analyzed: 12/17/18

Alkalinity, Total as CaCO ₃	94.0	10.0	mg/L	100	94.0	85-115
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LCS Dup (B812110-BSD1)

Prepared & Analyzed: 12/17/18

Alkalinity, Total as CaCO ₃	100	10.0	mg/L	100	100	85-115	6.19	20
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Project Name / Number: Richardson G2
Project Manager: Steve MoskalReported:
12/19/18 15:57

Total Recoverable Metals by ICP (E200.7) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B812068 - Total Rec. 200.7/200.8/200.2

Blank (B812068-BLK1)

Prepared: 12/11/18 Analyzed: 12/13/18

Iron	ND	0.050	mg/L							
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LCS (B812068-BS1)

Prepared: 12/11/18 Analyzed: 12/13/18

Iron	4.10	0.050	mg/L	4.00		103	85-115			
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LCS Dup (B812068-BSD1)

Prepared: 12/11/18 Analyzed: 12/13/18

Iron	4.09	0.050	mg/L	4.00		102	85-115	0.237	20	
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B812066 - Diss. 200.7/200.8

Blank (B812066-BLK1)

Prepared & Analyzed: 12/11/18

Barium	ND	0.020	mg/L
Calcium	ND	0.100	mg/L
Iron	ND	0.050	mg/L
Magnesium	ND	0.100	mg/L
Manganese	ND	0.020	mg/L
Potassium	ND	1.00	mg/L
Sodium	ND	1.00	mg/L
Strontium	ND	0.100	mg/L

LCS (B812066-BS1)

Prepared & Analyzed: 12/11/18

Barium	2.39	0.020	mg/L	2.50	95.7	85-115
Calcium	4.78	0.100	mg/L	5.00	95.6	85-115
Iron	4.74	0.050	mg/L	5.00	94.8	85-115
Magnesium	23.9	0.100	mg/L	25.0	95.5	85-115
Manganese	2.42	0.020	mg/L	2.50	96.8	85-115
Potassium	9.14	1.00	mg/L	10.0	91.4	85-115
Sodium	3.96	1.00	mg/L	4.05	97.9	85-115
Strontium	4.93	0.100	mg/L	5.00	98.5	85-115

LCS Dup (B812066-BSD1)

Prepared & Analyzed: 12/11/18

Barium	2.45	0.020	mg/L	2.50	97.9	85-115	2.30	20
Calcium	4.93	0.100	mg/L	5.00	98.6	85-115	3.05	20
Iron	4.86	0.050	mg/L	5.00	97.2	85-115	2.59	20
Magnesium	24.5	0.100	mg/L	25.0	98.0	85-115	2.55	20
Manganese	2.48	0.020	mg/L	2.50	99.4	85-115	2.60	20
Potassium	9.43	1.00	mg/L	10.0	94.3	85-115	3.08	20
Sodium	3.99	1.00	mg/L	4.05	98.5	85-115	0.581	20
Strontium	4.95	0.100	mg/L	5.00	99.1	85-115	0.517	20

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Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8121709 - Volatiles

Blank (8121709-BLK1)

Prepared: 12/17/18 Analyzed: 12/18/18

Surrogate: 4-Bromofluorobenzene (PID)	0.102		mg/L	0.100		102	81.3-128			
Benzene	ND	0.001	mg/L							
Ethylbenzene	ND	0.001	mg/L							
Toluene	ND	0.001	mg/L							
Total BTEX	ND	0.006	mg/L							
Total Xylenes	ND	0.003	mg/L							

LCS (8121709-BS1)

Prepared: 12/17/18 Analyzed: 12/18/18

Surrogate: 4-Bromofluorobenzene (PID)	0.101		mg/L	0.100		101	81.3-128			
Benzene	0.020	0.001	mg/L	0.0200		101	86.6-118			
Ethylbenzene	0.020	0.001	mg/L	0.0200		99.2	83.9-122			
Toluene	0.020	0.001	mg/L	0.0200		98.7	84.5-122			
Total Xylenes	0.062	0.003	mg/L	0.0600		103	81.8-124			

LCS Dup (8121709-BSD1)

Prepared: 12/17/18 Analyzed: 12/18/18

Surrogate: 4-Bromofluorobenzene (PID)	0.101		mg/L	0.100		101	81.3-128			
Benzene	0.020	0.001	mg/L	0.0200		102	86.6-118	0.370	7.71	
Ethylbenzene	0.020	0.001	mg/L	0.0200		98.8	83.9-122	0.409	11.8	
Toluene	0.020	0.001	mg/L	0.0200		99.4	84.5-122	0.681	8.86	
Total Xylenes	0.061	0.003	mg/L	0.0600		102	81.8-124	0.709	11.9	

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

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380 Airport Rd.
Durango CO, 81303

Project: API
Project Name / Number: Richardson G2
Project Manager: Steve Moskal

Reported:
12/19/18 15:57

Petroleum Hydrocarbons by GC FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8121704 - General Prep - Organics

Blank (8121704-BLK1)

Prepared & Analyzed: 12/17/18

Surrogate: 1-Chlorooctadecane	5.54		mg/L	5.00		111	44.6-151			
Surrogate: 1-Chlorooctane	4.68		mg/L	5.00		93.7	37.1-138			
DRO >C10-C28	ND	1.00	mg/L							
EXT DRO >C28-C36	ND	1.00	mg/L							
GRO C6-C10	ND	1.00	mg/L							

LCS (8121704-BS1)

Prepared & Analyzed: 12/17/18

Surrogate: 1-Chlorooctadecane	5.90		mg/L	5.00		118	44.6-151			
Surrogate: 1-Chlorooctane	5.23		mg/L	5.00		105	37.1-138			
DRO >C10-C28	55.2	1.00	mg/L	50.0		110	77.5-117			
GRO C6-C10	50.5	1.00	mg/L	50.0		101	72.8-108			

LCS Dup (8121704-BSD1)

Prepared & Analyzed: 12/17/18

Surrogate: 1-Chlorooctadecane	6.00		mg/L	5.00		120	44.6-151			
Surrogate: 1-Chlorooctane	5.30		mg/L	5.00		106	37.1-138			
DRO >C10-C28	55.4	1.00	mg/L	50.0		111	77.5-117	0.416	12.1	
GRO C6-C10	51.2	1.00	mg/L	50.0		102	72.8-108	1.32	12	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis *Results reported on as received basis unless designated as dry.
RPD	Relative Percent Difference
LCS	Laboratory Control Sample (Blank Spike)
RL	Report Limit
MDL	Method Detection Limit

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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† GAL cannot always accept verbal changes. Please fax or email written change requests.