



Bolack 002
30-045-23257
Bradenhead Water Sample

75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

31 August 2018

Sabre Beebe
BP America
380 Airport Rd.
Durango, CO 81303
RE: API

Enclosed are the results of analyses for samples received by the laboratory on 08/17/18 13:20.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads 'Jeremy D. Allen'.

Jeremy D Allen For Debbie Zufelt
Reports Manager

NMOC
FEB 13 2019
DISTRICT III

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.



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Project: API
Project Name / Number: Bradenhead
Project Manager: Sabre Beebe

Reported:
08/31/18 13:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Bolack 2	1808222-01	Water	08/16/18 08:16	08/17/18 13:20	Q1

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Jeremy D Allen For Debbie Zufelt, Reports Manager

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Bolack 2

1808222-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry									
Alkalinity, Bicarbonate as CaCO ₃ *	<10.0	10.0		mg/L	10	08/29/18	2320 B		JDU
Alkalinity, Carbonate as CaCO ₃ *	320	10.0		mg/L	10	08/29/18	2320 B		JDU
Alkalinity, Hydroxide as CaCO ₃ *	570	10.0		mg/L	10	08/29/18	2320 B		JDU
Alkalinity, Total as CaCO ₃ *	890	10.0		mg/L	10	08/29/18	2320 B		JDU
Chloride*	<200	200	38.6	mg/L	200	08/24/18	EPA300.0		AES
Conductivity*	12400	10.0		uS/cm	1	08/22/18	2510 B	Q1	JDU
pH*	10.9			pH Units	1	08/21/18	EPA150.1	H1, Q1	JDU
Resistivity	80.8			ohm/cm	1	08/23/18	2510 B		JDU
Total Dissolved Solids*	9750	20.0		mg/L	2	08/24/18	EPA160.1	H2	JDU
Specific Gravity	1.010	0.8000		No Unit	1	08/23/18	Hydrometer		JDU
Sulfate*	6440	200	59.1	mg/L	200	08/24/18	EPA300.0		AES

Total Recoverable Metals by ICP (E200.7)

Iron*	18.6	0.500	0.174	mg/L	10	08/28/18	EPA200.7		JDA
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Dissolved Metals by ICP

Hardness	857	3.31	0.546	mg/L	5	08/27/18	2340 B		AES
Barium*	<0.100	0.100	0.010	mg/L	5	08/27/18	EPA200.7		AES
Calcium*	343	0.500	0.064	mg/L	5	08/27/18	EPA200.7		AES
Iron*	<0.250	0.250	0.138	mg/L	5	08/27/18	EPA200.7		AES
Magnesium*	<0.500	0.500	0.094	mg/L	5	08/27/18	EPA200.7		AES
Manganese*	<0.100	0.100	0.013	mg/L	5	08/27/18	EPA200.7		AES
Potassium*	6.46	5.00	0.478	mg/L	5	08/27/18	EPA200.7		AES
Sodium*	2570	10.0	3.67	mg/L	10	08/27/18	EPA200.7		AES
Strontium*	8.88	0.500	0.014	mg/L	5	08/27/18	EPA200.7		AES

Cation/Anion Balance	-5.39
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B808201 - General Prep - Wet Chem										
Reference (B808201-SRM1)				Prepared & Analyzed: 08/21/18						
Conductivity	500	10.0	uS/cm	491		102	90-110.1			
Batch B808203 - General Prep - Wet Chem										
Reference (B808203-SRM1)				Prepared & Analyzed: 08/21/18						
pH	8.85		pH Units	8.91		99.3	97.8-102.2			
Batch B808238 - General Prep - Wet Chem										
Blank (B808238-BLK1)				Prepared & Analyzed: 08/24/18						
Total Dissolved Solids	ND	10.0	mg/L							
Reference (B808238-SRM1)				Prepared & Analyzed: 08/24/18						
Total Dissolved Solids	365	10.0	mg/L	380		96.0	85-115			
Batch B808241 - General Prep - Wet Chem										
Blank (B808241-BLK1)				Prepared & Analyzed: 08/24/18						
Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							
LCS (B808241-BS1)				Prepared & Analyzed: 08/24/18						
Chloride	24.9	1.00	mg/L	25.0		99.8	90-110			
Sulfate	25.1	1.00	mg/L	25.0		100	90-110			
LCS Dup (B808241-BSD1)				Prepared & Analyzed: 08/24/18						
Chloride	25.1	1.00	mg/L	25.0		100	90-110	0.516	20	
Sulfate	24.9	1.00	mg/L	25.0		99.8	90-110	0.484	20	
Batch B808256 - General Prep - Wet Chem										
Blank (B808256-BLK1)				Prepared: 08/27/18 Analyzed: 08/29/18						
Alkalinity, Total as CaCO3	ND	10.0	mg/L							
LCS (B808256-BS1)				Prepared: 08/27/18 Analyzed: 08/29/18						
Alkalinity, Total as CaCO3	109	10.0	mg/L	100		109	85-115			
LCS Dup (B808256-BSD1)				Prepared: 08/27/18 Analyzed: 08/29/18						
Alkalinity, Total as CaCO3	110	10.0	mg/L	100		110	85-115	0.913	20	

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Jeremy D. Allen

Jeremy D Allen For Debbie Zufelt, Reports Manager

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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
Batch B808268 - Total Rec. 200.7/200.8/200.2										
Blank (B808268-BLK1)										
Iron	ND	0.050	mg/L							Prepared: 08/27/18 Analyzed: 08/28/18
LCS (B808268-BS1)										
Iron	3.83	0.050	mg/L	4.00		95.8	85-115			Prepared: 08/27/18 Analyzed: 08/28/18
LCS Dup (B808268-BSD1)										
Iron	3.81	0.050	mg/L	4.00		95.3	85-115	0.511	20	Prepared: 08/27/18 Analyzed: 08/28/18

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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
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Batch B808245 - Diss. 200.7/200.8

Blank (B808245-BLK1)

Prepared: 08/24/18 Analyzed: 08/27/18

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 (B808245-BS1)

Prepared: 08/24/18 Analyzed: 08/27/18

Barium	2.34	0.020	mg/L	2.50	93.5	85-115
Calcium	4.78	0.100	mg/L	5.00	95.6	85-115
Iron	4.73	0.050	mg/L	5.00	94.6	85-115
Magnesium	23.9	0.100	mg/L	25.0	95.6	85-115
Manganese	2.37	0.020	mg/L	2.50	94.8	85-115
Potassium	9.68	1.00	mg/L	10.0	96.8	85-115
Sodium	3.84	1.00	mg/L	4.05	94.8	85-115
Strontium	4.87	0.100	mg/L	5.00	97.4	85-115

LCS Dup (B808245-BSD1)

Prepared: 08/24/18 Analyzed: 08/27/18

Barium	2.36	0.020	mg/L	2.50	94.5	85-115	1.08	20
Calcium	4.75	0.100	mg/L	5.00	94.9	85-115	0.698	20
Iron	4.73	0.050	mg/L	5.00	94.6	85-115	0.0191	20
Magnesium	23.7	0.100	mg/L	25.0	94.9	85-115	0.731	20
Manganese	2.35	0.020	mg/L	2.50	94.2	85-115	0.685	20
Potassium	9.67	1.00	mg/L	10.0	96.7	85-115	0.0802	20
Sodium	3.83	1.00	mg/L	4.05	94.6	85-115	0.229	20
Strontium	4.86	0.100	mg/L	5.00	97.1	85-115	0.287	20

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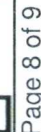
Notes and Definitions

Q1	Sample received outside of acceptable temperature range for analyses requiring cold storage.
H2	Sample analysis performed past hold time specified by the method.
H1	Sample was received several days after collected and subsequently analyzed past hold time.
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

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NEW MEXICO ENERGY, MINERALS
AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE
1000 RIO BRAZOS ROAD
AZTEC, NM 87410
(505 334-6178 FAX: (505) 334-6170
<http://www.emnrd.state.nm.us/ocd/>

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test 8-16-18 Operator BP America Production Company API # 3004523257

Property Name BOLACK 002-MV/DK Location: Unit G Section 19 Township 28 Range 8
(Well Name and Number)

Pressure (Shut-in or Producing) Producing Tubing 124 Intermediate N/A Casing 127 Bradenhead 15

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

Time	Bradenhead			Intermediate		Bradenhead Flowed	Intermediate Flowed
	BH Blowdown	Casing Monitor	Intermediate Monitor	Intermediate Blowdown	Casing Monitor		
5 minutes	0	128	N/A	N/A	N/A	Steady Flow	N/A
10 minutes	0	124				Surges	
15 minutes	0	123				Down to Nothing	3 SEC
20 minutes						No Flow	
25 minutes						Gas	
30 minutes						Gas and Water	
5 minute SI	14	123				Water	

If bradenhead flowed water, check all of the descriptions that apply below:

Clear _____ Fresh _____ Salty _____ Sulfur _____ Black _____

NMOCD

5 Minute Shut-in Bradenhead 14 Intermediate N/A

FEB 13 2019

REMARKS:

DISTRICT III

WATER SAMPLE TAKEN FROM BH
PLUNGER CAME UP

By SCOTT WILLARD Witness _____
FIELD TECH
(Position)