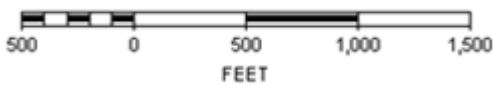


SCALE 1 : 9,000



LEGEND



Site Location

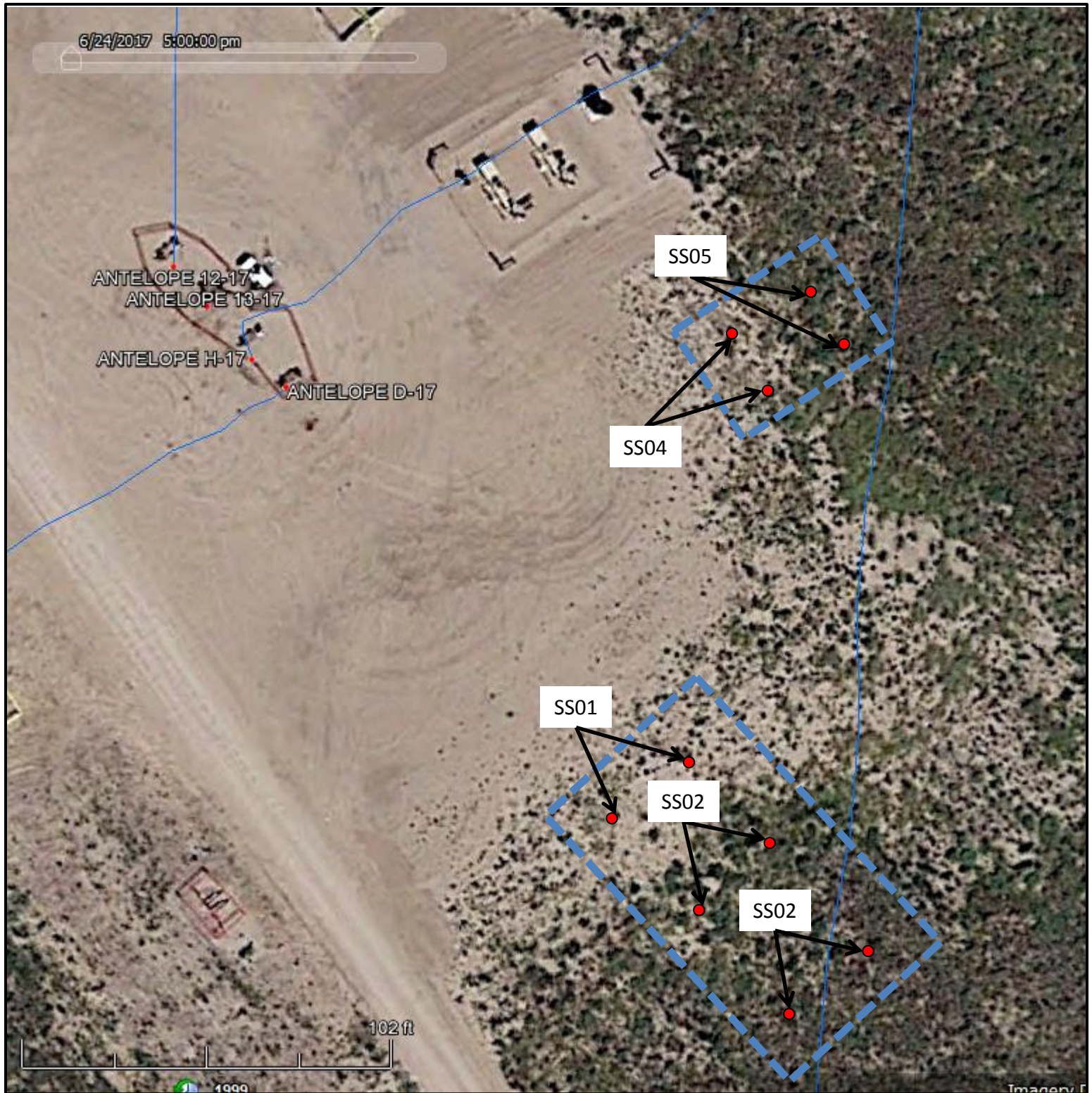
N



Figure 1  
Location Site Map  
April 24, 2019 LBK

**Antelope 13-17**  
**Facility ID: 420920**  
**NWSW, Sec 17, T5N, R62W, 6<sup>th</sup> PM**  
**Weld County, Colorado**





Aerial photograph courtesy of Google Earth Pro

LEGEND

- Excavation Footprint
- Sample Location

N



Figure 2  
Site Map  
April 24, 2019 LBK

**Antelope 13-17**  
**Facility ID: 420920**  
**NWSW, Sec 17, T5N, R62W, 6<sup>th</sup> PM**  
**Weld County, Colorado**

**TABLE 1**  
**SOIL ANALYTICAL RESULTS**  
**ANTELOPE 13-17**  
**WELD COUNTY, COLORADO**  
**BONANZA CREEK ENERGY OPERATING COMPANY LLC.**

Parameters		COGCC Table 910-1 Concentration Level	SS01	SS02	SS03	SS04	SS05
Sample Date			3/21/2019	3/21/2019	3/21/2019	3/21/2019	3/21/2019
Sample Depth (feet)			0.5-1	0.5-1	0.5-1	0.5-1	0.5-1
BTEX	Benzene	0.17	<0.002	<0.002	<0.002	<0.002	<0.002
	Toluene	85	<0.002	<0.002	<0.002	<0.002	<0.002
	Ethylbenzene	100	<0.002	<0.002	<0.002	<0.002	<0.002
	Total Xylenes	175	<0.002	<0.002	<0.002	<0.002	<0.002
TPH	DRO	--	<50	<50	<50	<50	<50
	GRO	--	<50	<50	<50	<50	<50
	Total	500	<50	<50	<50	<50	<50
Inorganics	EC (mmhos/cm)	<4	0.0646	0.0550	0.0557	0.0816	0.0228
	SAR	<12	0.45	1.22	0.50	0.16	0.53
	pH (unitless)	6 - 9	7.75	8.12	8.07	7.62	7.52

**Notes:**

COGCC - Colorado Oil and Gas Conservation Commission

-- - no concentration level is available

BTEX - benzene, toluene, ethylbenzene, xylenes (total)

DRO - diesel range organics

GRO - gasoline range organics

TPH - total petroleum hydrocarbons

EC - electrical conductivity

mmhos/cm - millimhos per centimeter

SAR - sodium adsorption ratio

All results are in mg/kg unless stated otherwise.



April 02, 2019

**Bonanza Creek Energy, Inc.**

**Brian Dodek**

**410 17th St, Suite 1400**

**Denver**

**CO 80211**

**Project Name - Antelope 13-17**

**Project Number - [none]**

Attached are your analytical results for Antelope 13-17 received by Origins Laboratory, Inc. March 26, 2019. This project is associated with Origins project number Y903363-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y903363-01	Soil	March 21, 2019 16:00	03/26/2019 07:40
SS02	Y903363-02	Soil	March 21, 2019 16:05	03/26/2019 07:40
SS03	Y903363-03	Soil	March 21, 2019 16:10	03/26/2019 07:40
SS04	Y903363-04	Soil	March 21, 2019 16:15	03/26/2019 07:40
SS05	Y903363-05	Soil	March 21, 2019 16:20	03/26/2019 07:40

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Jen Pellegrini For Noelle Doyle Mathis, President



Jen Pellegrini For Noelle Doyle Mathis, President

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

### Sample Receipt Checklist

Origins Work Order: 4903363 Client: Bonanza Creek  
Client Project ID: Antelope 13-17  
Checklist Completed by: JG Shipped Via: HD  
Date/time completed: 3/26/19 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Airbill #: N/A  
Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
(Describe)  
Cooler Number/Temperature: 1 / 2.0 °C \_\_\_\_\_ / \_\_\_\_\_ °C \_\_\_\_\_ / \_\_\_\_\_ °C  
Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JG

Date/Time Reviewed 3/26/19

Origins Laboratory, Inc.

*Jefe Pellegrini*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS01

3/21/2019 4:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-01 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B9C2701	JTD	03/27/2019	03/27/2019	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4

107 %

70-130

"

"

"

Surrogate: Toluene-d8

95.8 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

102 %

70-130

"

"

"

### GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9C2702	JTD	03/27/2019	03/27/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	JTD	"	"	U

Surrogate: o-Terphenyl

75.0 %

59-131

"

"

"

### Metals (Saturated Paste Prep)

Calcium	3.11		me/L	1	'[none]'		03/26/2019	04/01/2019	
Magnesium	1.27		"	"	"		"	"	
Sodium	0.67		"	"	"		"	"	

### pH in Soil by EPA 9045D

pH	7.75		pH Units	1	B9C2703	OLAB	03/27/2019	03/27/2019	
----	------	--	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

SS01

3/21/2019 4:00:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.  
Y903363-01 (Soil)

## SAR by 20B Saturated Paste

SAR	0.45		1		'[none]'		03/26/2019	04/01/2019	
-----	------	--	---	--	----------	--	------------	------------	--

## Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0646	0.00501	mmhos/cm	1	B9C2704	OLAB	03/27/2019	03/27/2019	
---------------------------	--------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS02

3/21/2019 4:05:00PM

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-02 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B9C2701	JTD	03/27/2019	03/27/2019	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4

110 %

70-130

"

"

"

Surrogate: Toluene-d8

94.0 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

100 %

70-130

"

"

"

### GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9C2702	JTD	03/27/2019	03/27/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	JTD	"	"	U

Surrogate: o-Terphenyl

71.5 %

59-131

"

"

"

### Metals (Saturated Paste Prep)

Calcium	1.55		me/L	1	'[none]'		03/26/2019	04/01/2019	
Magnesium	0.66		"	"	"		"	"	
Sodium	1.28		"	"	"		"	"	

### pH in Soil by EPA 9045D

pH	8.12		pH Units	1	B9C2703	OLAB	03/27/2019	03/27/2019	
----	------	--	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS02

3/21/2019 4:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	---------	----------	----------	-------

### Origins Laboratory, Inc. Y903363-02 (Soil)

#### SAR by 20B Saturated Paste

SAR	1.22			1	'[none]'		03/26/2019	04/01/2019	
-----	------	--	--	---	----------	--	------------	------------	--

#### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0550	0.00500	mmhos/cm	1	B9C2704	OLAB	03/27/2019	03/27/2019	
---------------------------	--------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS03

3/21/2019 4:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-03 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B9C2701	JTD	03/27/2019	03/27/2019	U
Toluene	ND	0.002	"	"	"	JTD	"	"	U
Ethylbenzene	ND	0.002	"	"	"	JTD	"	"	U
Xylenes, total	ND	0.002	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4

110 %

70-130

"

"

"

Surrogate: Toluene-d8

96.6 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

103 %

70-130

"

"

"

### GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9C2702	JTD	03/27/2019	03/27/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	JTD	"	"	U

Surrogate: o-Terphenyl

75.8 %

59-131

"

"

"

### Metals (Saturated Paste Prep)

Calcium	1.49	me/L	1	"[none]"		03/26/2019	04/01/2019
Magnesium	0.64	"	"	"		"	"
Sodium	0.52	"	"	"		"	"

### pH in Soil by EPA 9045D

pH	8.07	pH Units	1	B9C2703	OLAB	03/27/2019	03/27/2019
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Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS03

3/21/2019 4:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-03 (Soil)

### SAR by 20B Saturated Paste

SAR	0.50			1	'[none]'		03/26/2019	04/01/2019	
-----	------	--	--	---	----------	--	------------	------------	--

### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0557	0.00500	mmhos/cm	1	B9C2704	OLAB	03/27/2019	03/27/2019	
---------------------------	--------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS04

3/21/2019 4:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-04 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B9C2701	KDK	03/27/2019	03/27/2019	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

113 %

70-130

"

"

"

Surrogate: Toluene-d8

97.4 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

103 %

70-130

"

"

"

### GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9C2702	JTD	03/27/2019	03/27/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	JTD	"	"	U

Surrogate: o-Terphenyl

77.0 %

59-131

"

"

"

### Metals (Saturated Paste Prep)

Calcium	6.13		me/L	1	'[none]'		03/26/2019	04/01/2019	
Magnesium	2.48		"	"	"		"	"	
Sodium	0.33		"	"	"		"	"	

### pH in Soil by EPA 9045D

pH	7.62		pH Units	1	B9C2703	OLAB	03/27/2019	03/27/2019	
----	------	--	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS04

3/21/2019 4:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	---------	----------	----------	-------

### Origins Laboratory, Inc. Y903363-04 (Soil)

#### SAR by 20B Saturated Paste

SAR	0.16			1	'[none]'		03/26/2019	04/01/2019	
-----	------	--	--	---	----------	--	------------	------------	--

#### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0816	0.00500	mmhos/cm	1	B9C2704	OLAB	03/27/2019	03/27/2019	
---------------------------	--------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



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Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS05

3/21/2019 4:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

## Origins Laboratory, Inc. Y903363-05 (Soil)

### BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B9C2701	KDK	03/27/2019	03/27/2019	U
Toluene	ND	0.002	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.002	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.002	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4

113 %

70-130

"

"

"

Surrogate: Toluene-d8

94.2 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

103 %

70-130

"

"

"

### GRO (TVPH)/DRO (TEPH)by EPA 8015C

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9C2702	JTD	03/27/2019	03/27/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	JTD	"	"	U

Surrogate: o-Terphenyl

83.8 %

59-131

"

"

"

### Metals (Saturated Paste Prep)

Calcium	1.33	me/L	1	"[none]"			03/26/2019	04/01/2019	
Magnesium	0.78	"	"	"			"	"	
Sodium	0.54	"	"	"			"	"	

### pH in Soil by EPA 9045D

pH	7.52	pH Units	1	B9C2703	OLAB	03/27/2019	03/27/2019		
----	------	----------	---	---------	------	------------	------------	--	--

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## SS05

3/21/2019 4:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	--------------------	-------	----------	-------	---------	----------	----------	-------

### Origins Laboratory, Inc. Y903363-05 (Soil)

#### SAR by 20B Saturated Paste

SAR	0.53			1	'[none]'		03/26/2019	04/01/2019	
-----	------	--	--	---	----------	--	------------	------------	--

#### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0228	0.00500	mmhos/cm	1	B9C2704	OLAB	03/27/2019	03/27/2019	
---------------------------	--------	---------	----------	---	---------	------	------------	------------	--

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

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

**Batch B9C2701 - EPA 5030 (soil)**

**Blank (B9C2701-BLK1)**

Prepared: 03/27/2019 Analyzed: 03/27/2019

Benzene	ND	0.002	mg/kg							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.5	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: Antelope 13-17

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9C2701 - EPA 5030 (soil)

**LCS (B9C2701-BS1)**

Prepared: 03/27/2019 Analyzed: 03/27/2019

Benzene	0.103	0.002	mg/kg	0.100		103	77.1-124			
Toluene	0.101	0.002	"	0.100		101	74.5-128			
Ethylbenzene	0.101	0.002	"	0.100		101	66.4-127			
m,p-Xylene	0.202	0.004	"	0.200		101	76.6-124			
o-Xylene	0.100	0.002	"	0.100		99.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		98.6	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9C2701 - EPA 5030 (soil)**

Matrix Spike (B9C2701-MS1)		Source: Y903363-01			Prepared: 03/27/2019 Analyzed: 03/27/2019					
Benzene	0.102	0.002	mg/kg	0.100	ND	102	71.8-126			
Toluene	0.095	0.002	"	0.100	ND	95.3	65.1-130			
Ethylbenzene	0.094	0.002	"	0.100	ND	93.6	62.2-130			
m,p-Xylene	0.187	0.004	"	0.200	0.0009	93.2	46.5-137			
o-Xylene	0.094	0.002	"	0.100	0.0005	93.1	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Brian Dodek

Project Number: [none]

Project: Antelope 13-17

**Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9C2701 - EPA 5030 (soil)**

Matrix Spike Dup (B9C2701-MSD1)		Source: Y903363-01			Prepared: 03/27/2019 Analyzed: 03/27/2019					
Benzene	0.091	0.002	mg/kg	0.100	ND	91.2	71.8-126	10.7	11.3	
Toluene	0.083	0.002	"	0.100	ND	82.5	65.1-130	14.3	15.4	
Ethylbenzene	0.083	0.002	"	0.100	ND	83.0	62.2-130	12.0	19.6	
m,p-Xylene	0.166	0.004	"	0.200	0.0009	82.5	46.5-137	12.1	19.2	
o-Xylene	0.083	0.002	"	0.100	0.0005	82.2	54.2-134	12.3	17.9	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Extractable Petroleum Hydrocarbons by 8015C - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B9C2702 - EPA 3580

#### Blank (B9C2702-BLK1)

Prepared: 03/27/2019 Analyzed: 03/27/2019

Gasoline (C6-C10)	ND	50.0	mg/kg							U
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Diesel (C10-C28)	ND	50.0	"							U
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Surrogate: o-Terphenyl	30		"	50.0		59.3	59-131			
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#### LCS (B9C2702-BS1)

Prepared: 03/27/2019 Analyzed: 03/27/2019

Gasoline (C6-C10)	800	50.0	mg/kg	1000		80.0	59-133			
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Diesel (C10-C28)	868	50.0	"	1000		86.8	64-121			
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Surrogate: o-Terphenyl	43		"	50.0		86.9	59-131			
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#### Matrix Spike (B9C2702-MS1)

Source: Y903363-01

Prepared: 03/27/2019 Analyzed: 03/27/2019

Gasoline (C6-C10)	819	50.0	mg/kg	1000	ND	81.9	57-139			
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Diesel (C10-C28)	899	50.0	"	1000	ND	89.9	53-125			
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Surrogate: o-Terphenyl	46		"	50.0		92.1	59-131			
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#### Matrix Spike Dup (B9C2702-MSD1)

Source: Y903363-01

Prepared: 03/27/2019 Analyzed: 03/27/2019

Gasoline (C6-C10)	841	50.0	mg/kg	1000	ND	84.1	57-139	2.59	20	
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Diesel (C10-C28)	924	50.0	"	1000	ND	92.4	53-125	2.80	20	
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Surrogate: o-Terphenyl	46		"	50.0		91.2	59-131			
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Brian Dodek

Project Number: [none]

Project: Antelope 13-17

## Classical Chemistry Parameters - Quality Control

### Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B9C2703 - NO PREP</b>										
<b>Duplicate (B9C2703-DUP1)</b>		<b>Source: Y903363-01</b>			Prepared: 03/27/2019 Analyzed: 03/27/2019					
pH	7.69		pH Units		7.75			0.777	25	
<b>Batch B9C2704 - NO PREP</b>										
<b>Blank (B9C2704-BLK1)</b>		Prepared: 03/27/2019 Analyzed: 03/27/2019								
Specific Conductance (EC)	0.00260	0.00500	mmhos/cm							
<b>Duplicate (B9C2704-DUP1)</b>		<b>Source: Y903363-01</b>			Prepared: 03/27/2019 Analyzed: 03/27/2019					
Specific Conductance (EC)	0.0796	0.00500	mmhos/cm		0.0646			20.8	25	

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Brian Dodek

Project Number: [none]

Project: Antelope 13-17

### Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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