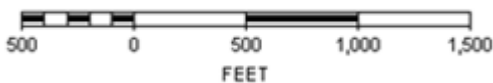


SCALE 1 : 9,000



LEGEND

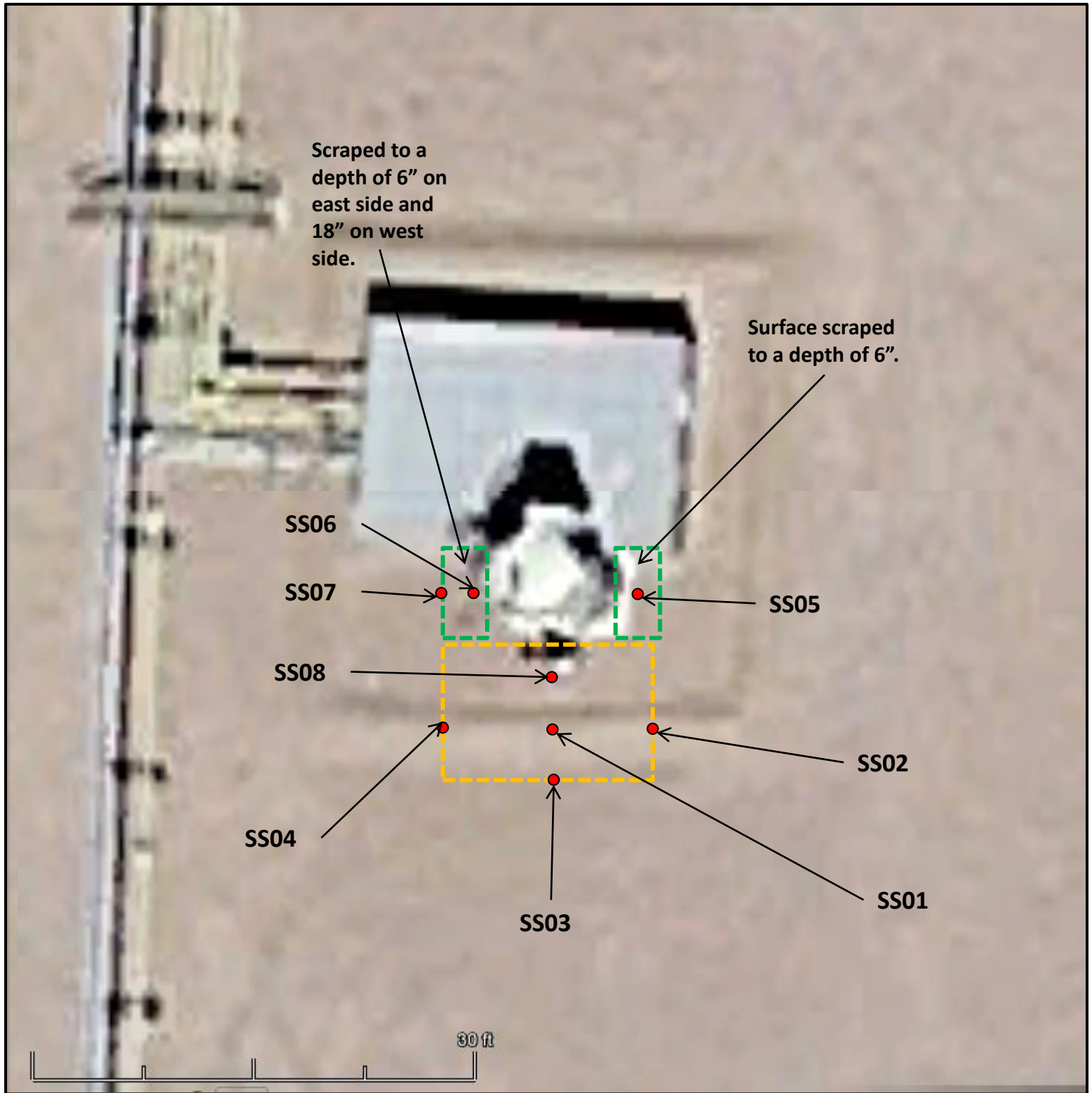
 Site Location

N



Figure 1
Location Site Map
January 10, 2018 LBK

French Lake 3-62-6 1B
Location ID: 422923
SWSW Sec 6, T3N, R62W, 6th PM
Weld County, Colorado



Aerial photograph courtesy of Google Earth Pro

LEGEND

- | | |
|--------------------|--------------------|
| ✗ Release Location | --- Excavated Area |
| ● Sample Location | --- Scraped Area |



Figure 2
Site Map

January 19, 2018 LBK

Pronghorn K-5-8 XRLNB
Location ID: 422923
SWSW, Sec 6, T3N, R62W, 6th PM
Weld County, Colorado

TABLE 1
SOIL ANALYTICAL RESULTS
FRENCH LAKE 3-62-6 1B
WELD COUNTY, COLORADO
BONANZA CREEK ENERGY OPERATING COMPANY LLC.

Parameters		COGCC Table 910-1 Concentration Level	SS01	SS02	SS03	SS04	SS05	SS06	SS07	SS08
Sample Date			1/11/2018	1/11/2018	1/11/2018	1/11/2018	1/11/2018	1/11/2018	1/11/2018	1/11/2018
Sample Depth (feet)			9-9.5	5-6	5-6	5-6	0.5-1	0.5-1	1.5-2	6-6.5
BTEX	Benzene	0.17	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Toluene	85	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Ethylbenzene	100	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.056
	Total Xylenes	175	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.316
TPH	DRO	--	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	144
	GRO	--	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0
	Total	500	<100	<100	<100	<100	<100	<100	<100	144

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

All results are in mg/kg unless stated otherwise.



January 19, 2018

Bonanza Creek Energy, Inc.

Brian Dodek

410 17th St, Suite 1400

Denver

CO 80211

Project Name - French Lakes 3-62-6 1B

Project Number - [none]

Attached are your analytical results for French Lakes 3-62-6 1B received by Origins Laboratory, Inc. January 15, 2018. This project is associated with Origins project number Y801205-01.

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: French Lakes 3-62-6 1B

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y801205-01	Soil	January 11, 2018 15:00	01/15/2018 07:30
SS02	Y801205-02	Soil	January 11, 2018 15:05	01/15/2018 07:30
SS03	Y801205-03	Soil	January 11, 2018 15:10	01/15/2018 07:30
SS04	Y801205-04	Soil	January 11, 2018 15:15	01/15/2018 07:30
SS05	Y801205-05	Soil	January 11, 2018 15:20	01/15/2018 07:30
SS06	Y801205-06	Soil	January 11, 2018 15:25	01/15/2018 07:30
SS07	Y801205-07	Soil	January 11, 2018 15:30	01/15/2018 07:30

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.

Project: French Lakes 3-62-6 1B

ORIGINS

LABORATORY, INC

14801205

www.originslaboratory.com

page 1 of 1

Client: Bonanza Creek Energy
Address: 410 17th Street Suite 1700 Denver, CO 80202

Project Manager: Brian Dodek/Luke Kelly
Project Name: French Lakes 3-62-6 113
Project Number:
Samples Collected By: Luke Kelly

Telephone Number: 720-225-6653
Email Address:

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summng Canister #		
SS01	1/11/18	1500	2	X				X			X	1
SS02		1505										2
SS03		1510										3
SS04		1515										4
SS05		1520										5
SS06		1525										6
SS07		1530										7
												8
												9
												10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
Luke Kelly	1/15/18	7:30				Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/>
						48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/>
						Standard <input checked="" type="checkbox"/>

Date Results Needed

2 9/1

1725 Elk Place

Denver, CO 80211

Phone: 303.433.1322

Fax: 303.265.9645

Origins Laboratory, Inc.

Jeff Pellipini

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: French Lakes 3-62-6 1B

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y801205

Client: Bonanza Creek

Client Project ID: French Lakes 3-62-6 1B

Checklist Completed by: JG

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/15/18

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 3.7 °C 1 °C 1 °C (Describe)

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 ⁽¹⁾ ?	<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 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ 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 1/16/18

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: French Lakes 3-62-6 1B

SS01

1/11/2018 3:00:00PM

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

Origins Laboratory, Inc.
Y801205-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/16/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

115 %

70-130

"

"

"

Surrogate: Toluene-d8

98.1 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

103 %

70-130

"

"

"

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

88.5 %

59-131

"

"

"

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: French Lakes 3-62-6 1B

SS02

1/11/2018 3:05:00PM

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

Origins Laboratory, Inc.
Y801205-02 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/16/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

114 % 70-130

" " "

Surrogate: Toluene-d8

98.5 % 70-130

" " "

Surrogate: 4-Bromofluorobenzene

101 % 70-130

" " "

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

84.8 % 59-131

" " "

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: French Lakes 3-62-6 1B

SS03

1/11/2018 3:10:00PM

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

Origins Laboratory, Inc.
Y801205-03 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/16/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

115 % 70-130

" " "

Surrogate: Toluene-d8

98.5 % 70-130

" " "

Surrogate: 4-Bromofluorobenzene

103 % 70-130

" " "

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

87.7 % 59-131

" " "

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: French Lakes 3-62-6 1B

SS04

1/11/2018 3:15:00PM

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

Origins Laboratory, Inc.
Y801205-04 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/17/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	90.7 %	59-131			"	"	"	
------------------------	--------	--------	--	--	---	---	---	--

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: French Lakes 3-62-6 1B

SS05

1/11/2018 3:20:00PM

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

Origins Laboratory, Inc.
Y801205-05 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/17/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

119 % 70-130

" " "

Surrogate: Toluene-d8

97.6 % 70-130

" " "

Surrogate: 4-Bromofluorobenzene

100 % 70-130

" " "

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

88.5 % 59-131

" " "

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: French Lakes 3-62-6 1B

SS06

1/11/2018 3:25:00PM

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

Origins Laboratory, Inc.
Y801205-06 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/17/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.9 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	102 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	86.2 %	59-131			"	"	"	
------------------------	--------	--------	--	--	---	---	---	--

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: French Lakes 3-62-6 1B

SS07

1/11/2018 3:30:00PM

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

Origins Laboratory, Inc.
Y801205-07 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1603	01/16/2018	01/17/2018	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4

115 %

70-130

"

"

"

Surrogate: Toluene-d8

97.3 %

70-130

"

"

"

Surrogate: 4-Bromofluorobenzene

101 %

70-130

"

"

"

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl

86.4 %

59-131

"

"

"

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Blank (B8A1603-BLK1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Blank (B8A1603-BLK2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		100	70-130			

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

LCS (B8A1603-BS1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Benzene	0.102	0.002	mg/kg	0.100		102	77.1-124			
Toluene	0.100	0.002	"	0.100		100	74.5-128			
Ethylbenzene	0.100	0.002	"	0.100		99.6	66.4-127			
m,p-Xylene	0.200	0.004	"	0.200		99.9	76.6-124			
o-Xylene	0.100	0.002	"	0.100		99.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.1	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	70-130			

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

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

LCS (B8A1603-BS2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Benzene	0.087	0.002	mg/kg	0.100		87.4	77.1-124			
Toluene	0.086	0.002	"	0.100		86.3	74.5-128			
Ethylbenzene	0.085	0.002	"	0.100		85.0	66.4-127			
m,p-Xylene	0.169	0.004	"	0.200		84.4	76.6-124			
o-Xylene	0.085	0.002	"	0.100		85.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.5	70-130			

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

Bonanza Creek Energy, Inc.

410 17th St, Suite 1400

Denver CO 80211

Brian Dodek

Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike (B8A1603-MS1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.166	0.002	mg/kg	0.100	ND	166	71.8-126			QM-07
Toluene	0.154	0.002	"	0.100	ND	154	65.1-130			QM-07
Ethylbenzene	0.142	0.002	"	0.100	ND	142	62.2-130			QM-07
m,p-Xylene	0.275	0.004	"	0.200	ND	138	46.5-137			QM-07
o-Xylene	0.146	0.002	"	0.100	0.0005	145	54.2-134			QM-07
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	93		"	62.5		148	70-130			S-04

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike (B8A1603-MS2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.092	0.002	mg/kg	0.100	ND	91.8	71.8-126			
Toluene	0.091	0.002	"	0.100	ND	91.0	65.1-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	91.3	62.2-130			
m,p-Xylene	0.182	0.004	"	0.200	ND	91.0	46.5-137			
o-Xylene	0.092	0.002	"	0.100	ND	92.5	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.5	70-130			

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike Dup (B8A1603-MSD1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.0	71.8-126	55.2	11.3	QR-03
Toluene	0.088	0.002	"	0.100	ND	88.5	65.1-130	54.1	15.4	QR-03
Ethylbenzene	0.089	0.002	"	0.100	ND	89.3	62.2-130	45.8	19.6	QR-03
m,p-Xylene	0.177	0.004	"	0.200	ND	88.5	46.5-137	43.5	19.2	QR-03
o-Xylene	0.089	0.002	"	0.100	0.0005	88.1	54.2-134	48.8	17.9	QR-03
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	96		"	62.5		154	70-130			S-04

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike Dup (B8A1603-MSD2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.087	0.002	mg/kg	0.100	ND	86.6	71.8-126	5.87	11.3	
Toluene	0.085	0.002	"	0.100	ND	84.8	65.1-130	7.08	15.4	
Ethylbenzene	0.083	0.002	"	0.100	ND	83.1	62.2-130	9.40	19.6	
m,p-Xylene	0.167	0.004	"	0.200	ND	83.6	46.5-137	8.48	19.2	
o-Xylene	0.085	0.002	"	0.100	ND	84.9	54.2-134	8.59	17.9	
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

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: French Lakes 3-62-6 1B

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 B8A1605 - EPA 3550B

Blank (B8A1605-BLK1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	45		"	50.0		90.9	59-131			
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Blank (B8A1605-BLK2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	45		"	50.0		90.9	59-131			
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LCS (B8A1605-BS1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	1000	50.0	mg/kg	1000		100	59-133			
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Diesel (C10-C28)	1020	50.0	"	1000		102	64-121			
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Surrogate: o-Terphenyl	53		"	50.0		107	59-131			
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LCS (B8A1605-BS2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	930	50.0	mg/kg	1000		93.0	59-133			
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Diesel (C10-C28)	942	50.0	"	1000		94.2	64-121			
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Surrogate: o-Terphenyl	49		"	50.0		97.9	59-131			
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Matrix Spike (B8A1605-MS1)

Source: Y801187-01

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	1060	50.0	mg/kg	1000	51.6	101	57-139			
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Diesel (C10-C28)	1560	50.0	"	1000	712	84.6	53-125			
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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: French Lakes 3-62-6 1B

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
Batch B8A1605 - EPA 3550B										
Matrix Spike (B8A1605-MS1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Surrogate: o-Terphenyl	48		mg/kg	50.0		96.3	59-131			
Matrix Spike (B8A1605-MS2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	947	50.0	mg/kg	1000	ND	94.7	57-139			
Diesel (C10-C28)	969	50.0	"	1000	ND	96.9	53-125			
Surrogate: o-Terphenyl	51		"	50.0		101	59-131			
Matrix Spike Dup (B8A1605-MSD1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	1090	50.0	mg/kg	1000	51.6	104	57-139	3.00	20	
Diesel (C10-C28)	1700	50.0	"	1000	712	98.5	53-125	8.52	20	
Surrogate: o-Terphenyl	51		"	50.0		103	59-131			
Matrix Spike Dup (B8A1605-MSD2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	939	50.0	mg/kg	1000	ND	93.9	57-139	0.830	20	
Diesel (C10-C28)	956	50.0	"	1000	ND	95.6	53-125	1.33	20	
Surrogate: o-Terphenyl	47		"	50.0		94.1	59-131			

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: French Lakes 3-62-6 1B

Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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.



January 19, 2018

Bonanza Creek Energy, Inc.

Brian Dodek

410 17th St, Suite 1400

Denver

CO 80211

Project Name - French Lakes 3-62-6 1B

Project Number - [none]

Attached are your analytical results for French Lakes 3-62-6 1B received by Origins Laboratory, Inc. January 15, 2018. This project is associated with Origins project number Y801206-01.

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: French Lakes 3-62-6 1B

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS08	Y801206-01	Soil	January 11, 2018 15:35	01/15/2018 07:30

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: French Lakes 3-62-6 1B

www.originslaboratory.com

page 1 of 1

7601206

ORIGINS LABORATORY, INC

Client: Bonanza Creek Energy

Address: 410 17th Street Suite 1700 Denver, CO 80202

Telephone Number: 720-225-6653

Email Address:

Project Manager: Brian Dodek/Luke Kelly

Project Name: French Lakes 3-62-6 1B

Project Number:

Samples Collected By: Luke Kelly

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summa Canister #			Other
SS08	1/11/18	1535	2	X					X				1
													2
													3
													4
													5
													6
													7
													8
													9
													10

Relinquished By: Luke Kelly

Date: 1/15/18

Time: 7:30

Received By:

Date: 1/15/18

Time: 7:30

Turnaround Time:

Same Day ☐ 24 Hr ☐

48 Hr ☐ 72 Hr ☐

Standard ☒

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

Origins Laboratory, Inc.

Jen 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: French Lakes 3-62-6 1B

Origins Laboratory

F-012207-01-R1

Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y801206

Client: Bonanza Creek

Client Project ID: French Lakes 3-62-6 1B

Checklist Completed by: JD

Shipped Via: 12

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 1/15/12

Airbill #: 0175

Matrix(s) Received: (Check all that apply): X Soil/Solid Water Other:

Cooler Number/Temperature: 1 13.9 °C °C °C °C

Thermometer ID: T603

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<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 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (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 ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾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) JD

Date/Time Reviewed 1/16/12

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: French Lakes 3-62-6 1B

SS08

1/11/2018 3:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801206-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8A1603	01/16/2018	01/17/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	0.056	0.050	"	"	"	"	"	
Xylenes, total	0.316	0.050	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4

107 % 70-130

" " "

Surrogate: Toluene-d8

95.8 % 70-130

" " "

Surrogate: 4-Bromofluorobenzene

100 % 70-130

" " "

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1605	01/16/2018	01/17/2018	U
Diesel (C10-C28)	144	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl

88.4 % 59-131

" " "

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Blank (B8A1603-BLK1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Blank (B8A1603-BLK2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

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	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		100	70-130			

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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

LCS (B8A1603-BS1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Benzene	0.102	0.002	mg/kg	0.100		102	77.1-124			
Toluene	0.100	0.002	"	0.100		100	74.5-128			
Ethylbenzene	0.100	0.002	"	0.100		99.6	66.4-127			
m,p-Xylene	0.200	0.004	"	0.200		99.9	76.6-124			
o-Xylene	0.100	0.002	"	0.100		99.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.1	70-130			
Surrogate: Toluene-d8	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	70-130			

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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: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

LCS (B8A1603-BS2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Benzene	0.087	0.002	mg/kg	0.100		87.4	77.1-124			
Toluene	0.086	0.002	"	0.100		86.3	74.5-128			
Ethylbenzene	0.085	0.002	"	0.100		85.0	66.4-127			
m,p-Xylene	0.169	0.004	"	0.200		84.4	76.6-124			
o-Xylene	0.085	0.002	"	0.100		85.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.5	70-130			

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Denver CO 80211

Brian Dodek

Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike (B8A1603-MS1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.166	0.002	mg/kg	0.100	ND	166	71.8-126			QM-07
Toluene	0.154	0.002	"	0.100	ND	154	65.1-130			QM-07
Ethylbenzene	0.142	0.002	"	0.100	ND	142	62.2-130			QM-07
m,p-Xylene	0.275	0.004	"	0.200	ND	138	46.5-137			QM-07
o-Xylene	0.146	0.002	"	0.100	0.0005	145	54.2-134			QM-07
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		98.0	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	93		"	62.5		148	70-130			S-04

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Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike (B8A1603-MS2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.092	0.002	mg/kg	0.100	ND	91.8	71.8-126			
Toluene	0.091	0.002	"	0.100	ND	91.0	65.1-130			
Ethylbenzene	0.091	0.002	"	0.100	ND	91.3	62.2-130			
m,p-Xylene	0.182	0.004	"	0.200	ND	91.0	46.5-137			
o-Xylene	0.092	0.002	"	0.100	ND	92.5	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		102	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.8	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.5	70-130			

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Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike Dup (B8A1603-MSD1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.094	0.002	mg/kg	0.100	ND	94.0	71.8-126	55.2	11.3	QR-03
Toluene	0.088	0.002	"	0.100	ND	88.5	65.1-130	54.1	15.4	QR-03
Ethylbenzene	0.089	0.002	"	0.100	ND	89.3	62.2-130	45.8	19.6	QR-03
m,p-Xylene	0.177	0.004	"	0.200	ND	88.5	46.5-137	43.5	19.2	QR-03
o-Xylene	0.089	0.002	"	0.100	0.0005	88.1	54.2-134	48.8	17.9	QR-03
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	96		"	62.5		154	70-130			S-04

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Project: French Lakes 3-62-6 1B

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 B8A1603 - EPA 5030 (soil)

Matrix Spike Dup (B8A1603-MSD2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Benzene	0.087	0.002	mg/kg	0.100	ND	86.6	71.8-126	5.87	11.3	
Toluene	0.085	0.002	"	0.100	ND	84.8	65.1-130	7.08	15.4	
Ethylbenzene	0.083	0.002	"	0.100	ND	83.1	62.2-130	9.40	19.6	
m,p-Xylene	0.167	0.004	"	0.200	ND	83.6	46.5-137	8.48	19.2	
o-Xylene	0.085	0.002	"	0.100	ND	84.9	54.2-134	8.59	17.9	
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.2	70-130			

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Project Number: [none]

Project: French Lakes 3-62-6 1B

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 B8A1605 - EPA 3550B

Blank (B8A1605-BLK1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	45		"	50.0		90.9	59-131			

Blank (B8A1605-BLK2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	45		"	50.0		90.9	59-131			

LCS (B8A1605-BS1)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	1000	50.0	mg/kg	1000		100	59-133			
Diesel (C10-C28)	1020	50.0	"	1000		102	64-121			
Surrogate: o-Terphenyl	53		"	50.0		107	59-131			

LCS (B8A1605-BS2)

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	930	50.0	mg/kg	1000		93.0	59-133			
Diesel (C10-C28)	942	50.0	"	1000		94.2	64-121			
Surrogate: o-Terphenyl	49		"	50.0		97.9	59-131			

Matrix Spike (B8A1605-MS1)

Source: Y801187-01

Prepared: 01/16/2018 Analyzed: 01/16/2018

Gasoline (C6-C10)	1060	50.0	mg/kg	1000	51.6	101	57-139			
Diesel (C10-C28)	1560	50.0	"	1000	712	84.6	53-125			

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Denver CO 80211

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Project Number: [none]

Project: French Lakes 3-62-6 1B

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
Batch B8A1605 - EPA 3550B										
Matrix Spike (B8A1605-MS1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Surrogate: o-Terphenyl	48		mg/kg	50.0		96.3	59-131			
Matrix Spike (B8A1605-MS2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	947	50.0	mg/kg	1000	ND	94.7	57-139			
Diesel (C10-C28)	969	50.0	"	1000	ND	96.9	53-125			
Surrogate: o-Terphenyl	51		"	50.0		101	59-131			
Matrix Spike Dup (B8A1605-MSD1)		Source: Y801187-01			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	1090	50.0	mg/kg	1000	51.6	104	57-139	3.00	20	
Diesel (C10-C28)	1700	50.0	"	1000	712	98.5	53-125	8.52	20	
Surrogate: o-Terphenyl	51		"	50.0		103	59-131			
Matrix Spike Dup (B8A1605-MSD2)		Source: Y801187-02			Prepared: 01/16/2018 Analyzed: 01/16/2018					
Gasoline (C6-C10)	939	50.0	mg/kg	1000	ND	93.9	57-139	0.830	20	
Diesel (C10-C28)	956	50.0	"	1000	ND	95.6	53-125	1.33	20	
Surrogate: o-Terphenyl	47		"	50.0		94.1	59-131			

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Project Number: [none]

Project: French Lakes 3-62-6 1B

Notes and Definitions

U Sample is Non-Detect.

S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

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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