

January 24, 2018

Quandary Consultants

Asher Weinberg

2252 Emerson St.

Denver

CO 80205

Project Name - Critter Creek 5-10H

Project Number - FCE005

Attached are your analytical results for Critter Creek 5-10H received by Origins Laboratory, Inc. January 15, 2018. This project is associated with Origins project number Y801214-01.

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



Quandary Consultants
2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	Y801214-01	Soil	January 13, 2018 13:16	01/15/2018 14:36
SS02	Y801214-02	Soil	January 13, 2018 13:12	01/15/2018 14:36
SS03	Y801214-03	Soil	January 13, 2018 13:15	01/15/2018 14:36
SS04	Y801214-04	Soil	January 13, 2018 13:11	01/15/2018 14:36
SS05	Y801214-05	Soil	January 13, 2018 13:17	01/15/2018 14:36
SS06	Y801214-06	Soil	January 13, 2018 13:14	01/15/2018 14:36
Background01	Y801214-07	Soil	January 13, 2018 13:23	01/15/2018 14:36

Origins Laboratory, Inc.



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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

1801214

page 1 of 1

Client: Quandary Consultants Project Manager: Asher Weinberg
 Address: 212 Glenarm Pl Project Name: Critter Creek 5-10H
Denver, CO 80205 Project Number: FCE005
 Telephone Number: (303) 265-9645 Samples Collected By: CC
 Email Address: aw@quandaryconsultants.com

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

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix				Analysis				Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air/Surface	Other	TPH (GAP/DKO)	EC	PH	SAR		
5501	1-13-18	1:16 PM	2	X									X	X	X		
5502		1:12 PM															
5503		1:15 PM															
5504		1:11 PM															
5505		1:17 PM															
5506		1:14 PM															
Background 01		1:23 PM															
Relinquished By: <u>Chris Caserio</u>	Date: <u>1-15-18</u>	Time: <u>2:36 PM</u>	Received By: <u>[Signature]</u>	Date: <u>1-15-18</u>	Time: <u>11:36</u>	Turnaround Time: <input type="checkbox"/> Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input checked="" type="checkbox"/> Standard											
Relinquished By:	Date:	Time:	Received By:	Date:	Time:												

Temp Received: 4.5 Date Results Needed

Origins Laboratory, Inc.

Jefe Pellegrini

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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 1801214

Client: Quandary Consultants
 Client Project ID: Critter Creek 5-10H

Checklist Completed by: JG
 Date/time completed: 1/16/18

Shipped Via: HD
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A

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

Cooler Number/Temperature: 1 / 4.5 °C / _____ °C / _____ °C / _____ °C (Describe)

Thermometer ID: 1003

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"/>			
Is there ice present (document if blue ice is used)	<input checked="" 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"/>		
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"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" 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"/>	
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 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) [Signature]

Date/Time Reviewed 1/18/18

Origins Laboratory, Inc.

[Signature: Jen Pellegrini]

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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS01
1/13/2018 1:16:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-01 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1701	01/17/2018	01/17/2018	U
Toluene	0.006	0.002	"	"	"	"	"	
Ethylbenzene	0.014	0.002	"	"	"	"	"	
Xylenes, total	0.107	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	114 %	70-130			"	"	"	
Surrogate: Toluene-d8	94.7 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	120 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	796	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	108 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.29		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.61		"	"	"	"	"	
Sodium	0.51		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.47		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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Origins Laboratory, Inc.



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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS01

1/13/2018 1:16:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-01 (Soil)

SAR by 20B Saturated Paste

SAR	0.42			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0650		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS02
1/13/2018 1:12:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-02 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1701	01/17/2018	01/17/2018	U
Toluene	0.002	0.002	"	"	"	"	"	
Ethylbenzene	0.002	0.002	"	"	"	"	"	
Xylenes, total	0.008	0.002	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	113 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.1 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	111 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	837	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	120 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.64		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.65		"	"	"	"	"	
Sodium	0.36		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.55		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS02

1/13/2018 1:12:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-02 (Soil)

SAR by 20B Saturated Paste

SAR	0.28			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0818		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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Quandary Consultants
 2252 Emerson St.
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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS03

1/13/2018 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-03 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1701	01/17/2018	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	99.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	103 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	84.1 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	3.51		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.84		"	"	"	"	"	
Sodium	0.31		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.58		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS03

1/13/2018 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-03 (Soil)

SAR by 20B Saturated Paste

SAR	0.21			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0671		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS04

1/13/2018 1:11:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-04 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1701	01/17/2018	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	98.0 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	143	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	94.4 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.70		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.71		"	"	"	"	"	
Sodium	0.41		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.57		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS04

1/13/2018 1:11:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-04 (Soil)

SAR by 20B Saturated Paste

SAR	0.31			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0512		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS05

1/13/2018 1:17:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-05 (Soil)

BTEX by EPA 8260C

Benzene	0.780	0.498	mg/kg	250	B8A1701	01/17/2018	01/22/2018	
Toluene	36.5	0.498	"	"	"	"	"	
Ethylbenzene	39.3	0.498	"	"	"	"	"	
Xylenes, total	121	0.498	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	70-130			"	"	"	

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

Gasoline (C6-C10)	9610	500	mg/kg	10	B8A1702	01/17/2018	01/22/2018	
Diesel (C10-C28)	15500	500	"	"	"	"	"	

Surrogate: o-Terphenyl	131 %	59-131			"	"	01/18/2018	
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Metals (Saturated Paste Prep)

Calcium	2.43		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.45		"	"	"	"	"	
Sodium	0.23		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.86		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS05

1/13/2018 1:17:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-05 (Soil)

SAR by 20B Saturated Paste

SAR	0.19			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0495		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

SS06

1/13/2018 1:14:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-06 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.002	mg/kg	1	B8A1701	01/17/2018	01/17/2018	U
Toluene	0.004	0.002	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %	70-130			"	"	"	
Surrogate: Toluene-d8	99.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	106 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	748	50.0	"	"	"	"	"	

Surrogate: o-Terphenyl	84.9 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.40		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.74		"	"	"	"	"	
Sodium	0.40		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.98		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

SS06

1/13/2018 1:14:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-06 (Soil)

SAR by 20B Saturated Paste

SAR	0.32			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0508		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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 2252 Emerson St.
 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

Background01
1/13/2018 1:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-07 (Soil)

BTEX by EPA 8260C

Benzene	ND	0.050	mg/kg	25	B8A1701	01/17/2018	01/22/2018	U
Toluene	ND	0.050	"	"	"	"	"	U
Ethylbenzene	ND	0.050	"	"	"	"	"	U
Xylenes, total	ND	0.050	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %	70-130			"	"	"	
Surrogate: Toluene-d8	98.6 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	70-130			"	"	"	

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

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B8A1702	01/17/2018	01/18/2018	U
Diesel (C10-C28)	ND	50.0	"	"	"	"	"	U

Surrogate: o-Terphenyl	87.3 %	59-131			"	"	"	
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Metals (Saturated Paste Prep)

Calcium	2.43		me/L	1	'[none]'	01/18/2018	01/23/2018	
Magnesium	0.50		"	"	"	"	"	
Sodium	0.33		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.88		pH Units	1	B8A1703	01/17/2018	01/17/2018	
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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

Background01
1/13/2018 1:23:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y801214-07 (Soil)

SAR by 20B Saturated Paste

SAR	0.27			1	'[none]'	01/18/2018	01/23/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0511		mmhos/cm	1	B8A1704	01/17/2018	01/17/2018	
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 Denver CO 80205

Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

Blank (B8A1701-BLK1)

Prepared: 01/17/2018 Analyzed: 01/17/2018

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	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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Asher Weinberg
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 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

Blank (B8A1701-BLK2)

Prepared: 01/17/2018 Analyzed: 01/17/2018

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	63		"	62.5		100	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

LCS (B8A1701-BS1)

Prepared: 01/17/2018 Analyzed: 01/17/2018

Benzene	0.083	0.002	mg/kg	0.100		83.0	77.1-124			
Toluene	0.082	0.002	"	0.100		81.6	74.5-128			
Ethylbenzene	0.083	0.002	"	0.100		82.5	66.4-127			
m,p-Xylene	0.163	0.004	"	0.200		81.7	76.6-124			
o-Xylene	0.084	0.002	"	0.100		83.5	76.6-124			
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	62		"	62.5		98.8	70-130			

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 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

LCS (B8A1701-BS2)

Prepared: 01/17/2018 Analyzed: 01/17/2018

Benzene	0.096	0.002	mg/kg	0.100		95.9	77.1-124			
Toluene	0.095	0.002	"	0.100		95.3	74.5-128			
Ethylbenzene	0.096	0.002	"	0.100		96.2	66.4-127			
m,p-Xylene	0.190	0.004	"	0.200		95.2	76.6-124			
o-Xylene	0.097	0.002	"	0.100		96.8	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

Matrix Spike (B8A1701-MS1)	Source: Y801214-01			Prepared: 01/17/2018 Analyzed: 01/18/2018						
Benzene	0.094	0.002	mg/kg	0.100	ND	94.4	71.8-126			
Toluene	0.087	0.002	"	0.100	0.006	81.2	65.1-130			
Ethylbenzene	0.113	0.002	"	0.100	0.014	99.0	62.2-130			
m,p-Xylene	0.238	0.004	"	0.200	0.046	95.8	46.5-137			
o-Xylene	0.168	0.002	"	0.100	0.061	107	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	63		ug/kg	62.5		101	70-130			
Surrogate: Toluene-d8	62		"	62.5		98.4	70-130			
Surrogate: 4-Bromofluorobenzene	85		"	62.5		136	70-130			S-04

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 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

Matrix Spike (B8A1701-MS2)	Source: Y801214-02			Prepared: 01/17/2018 Analyzed: 01/17/2018						
Benzene	0.095	0.002	mg/kg	0.100	ND	94.9	71.8-126			
Toluene	0.092	0.002	"	0.100	0.002	90.1	65.1-130			
Ethylbenzene	0.096	0.002	"	0.100	0.002	93.7	62.2-130			
m,p-Xylene	0.189	0.004	"	0.200	0.004	92.3	46.5-137			
o-Xylene	0.098	0.002	"	0.100	0.003	94.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	72		"	62.5		115	70-130			

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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)										
Matrix Spike Dup (B8A1701-MSD1)			Source: Y801214-01			Prepared: 01/17/2018 Analyzed: 01/17/2018				
Benzene	0.120	0.002	mg/kg	0.100	ND	120	71.8-126	24.3	11.3	QR-02
Toluene	0.114	0.002	"	0.100	0.006	108	65.1-130	27.0	15.4	QR-02
Ethylbenzene	0.131	0.002	"	0.100	0.014	117	62.2-130	14.6	19.6	
m,p-Xylene	0.269	0.004	"	0.200	0.046	111	46.5-137	12.4	19.2	
o-Xylene	0.169	0.002	"	0.100	0.061	107	54.2-134	0.190	17.9	
Surrogate: 1,2-Dichloroethane-d4	64		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.3	70-130			
Surrogate: 4-Bromofluorobenzene	71		"	62.5		113	70-130			

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 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1701 - EPA 5030 (soil)

Matrix Spike Dup (B8A1701-MSD2)	Source: Y801214-02			Prepared: 01/17/2018 Analyzed: 01/17/2018						
Benzene	0.091	0.002	mg/kg	0.100	ND	90.5	71.8-126	4.68	11.3	
Toluene	0.085	0.002	"	0.100	0.002	82.4	65.1-130	8.71	15.4	
Ethylbenzene	0.088	0.002	"	0.100	0.002	85.8	62.2-130	8.55	19.6	
m,p-Xylene	0.174	0.004	"	0.200	0.004	84.8	46.5-137	8.20	19.2	
o-Xylene	0.090	0.002	"	0.100	0.003	86.5	54.2-134	8.17	17.9	
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		104	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	71		"	62.5		114	70-130			

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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1702 - EPA 3550B

Blank (B8A1702-BLK1)

Prepared: 01/17/2018 Analyzed: 01/18/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	47		"	50.0		94.9	59-131			

Blank (B8A1702-BLK2)

Prepared: 01/17/2018 Analyzed: 01/18/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	45		"	50.0		90.8	59-131			

Blank (B8A1702-BLK3)

Prepared: 01/17/2018 Analyzed: 01/17/2018

Gasoline (C6-C10)	ND	50.0	mg/kg							U
Diesel (C10-C28)	ND	50.0	"							U
Surrogate: o-Terphenyl	38		"	50.0		76.0	59-131			

LCS (B8A1702-BS1)

Prepared: 01/17/2018 Analyzed: 01/18/2018

Gasoline (C6-C10)	972	50.0	mg/kg	1000		97.2	59-133			
Diesel (C10-C28)	1000	50.0	"	1000		100	64-121			
Surrogate: o-Terphenyl	49		"	50.0		98.4	59-131			

LCS (B8A1702-BS2)

Prepared: 01/17/2018 Analyzed: 01/18/2018

Gasoline (C6-C10)	804	50.0	mg/kg	1000		80.4	59-133			
Diesel (C10-C28)	777	50.0	"	1000		77.7	64-121			

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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1702 - EPA 3550B										
LCS (B8A1702-BS2)					Prepared: 01/17/2018 Analyzed: 01/18/2018					
Surrogate: o-Terphenyl	43		mg/kg	50.0		86.2	59-131			
LCS (B8A1702-BS3)					Prepared: 01/17/2018 Analyzed: 01/17/2018					
Gasoline (C6-C10)	955	50.0	mg/kg	1000		95.5	59-133			
Diesel (C10-C28)	963	50.0	"	1000		96.3	64-121			
Surrogate: o-Terphenyl	50		"	50.0		99.7	59-131			
Matrix Spike (B8A1702-MS1)		Source: Y801214-03			Prepared: 01/17/2018 Analyzed: 01/18/2018					
Gasoline (C6-C10)	985	50.0	mg/kg	1000	ND	98.5	57-139			
Diesel (C10-C28)	946	50.0	"	1000	ND	94.6	53-125			
Surrogate: o-Terphenyl	50		"	50.0		100	59-131			
Matrix Spike (B8A1702-MS2)		Source: Y801242-11			Prepared: 01/17/2018 Analyzed: 01/18/2018					
Gasoline (C6-C10)	1020	50.0	mg/kg	1000	ND	102	57-139			
Diesel (C10-C28)	1000	50.0	"	1000	ND	100	53-125			
Surrogate: o-Terphenyl	51		"	50.0		102	59-131			
Matrix Spike (B8A1702-MS3)		Source: Y801242-15			Prepared: 01/17/2018 Analyzed: 01/17/2018					
Gasoline (C6-C10)	957	50.0	mg/kg	1000	ND	95.7	57-139			
Diesel (C10-C28)	958	50.0	"	1000	ND	95.8	53-125			
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			
Matrix Spike Dup (B8A1702-MSD1)		Source: Y801214-03			Prepared: 01/17/2018 Analyzed: 01/18/2018					
Gasoline (C6-C10)	1120	50.0	mg/kg	1000	ND	112	57-139	13.1	20	
Diesel (C10-C28)	1090	50.0	"	1000	ND	109	53-125	13.8	20	
Surrogate: o-Terphenyl	57		"	50.0		114	59-131			
Matrix Spike Dup (B8A1702-MSD2)		Source: Y801242-11			Prepared: 01/17/2018 Analyzed: 01/18/2018					

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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

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 B8A1702 - EPA 3550B										
Matrix Spike Dup (B8A1702-MSD2)			Source: Y801242-11		Prepared: 01/17/2018 Analyzed: 01/18/2018					
Gasoline (C6-C10)	1020	50.0	mg/kg	1000	ND	102	57-139	0.414	20	
Diesel (C10-C28)	1020	50.0	"	1000	ND	102	53-125	1.82	20	
Surrogate: o-Terphenyl	50		"	50.0		101	59-131			
Matrix Spike Dup (B8A1702-MSD3)			Source: Y801242-15		Prepared: 01/17/2018 Analyzed: 01/17/2018					
Gasoline (C6-C10)	993	50.0	mg/kg	1000	ND	99.3	57-139	3.70	20	
Diesel (C10-C28)	982	50.0	"	1000	ND	98.2	53-125	2.48	20	
Surrogate: o-Terphenyl	50		"	50.0		100	59-131			

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Asher Weinberg
 Project Number: FCE005
 Project: Critter Creek 5-10H

Classical Chemistry Parameters - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8A1703 - NO PREP										
Duplicate (B8A1703-DUP1)		Source: Y801236-01			Prepared: 01/17/2018 Analyzed: 01/17/2018					
pH	8.80		pH Units		8.45			4.06	25	
Duplicate (B8A1703-DUP2)		Source: Y801236-02			Prepared: 01/17/2018 Analyzed: 01/17/2018					
pH	7.96		pH Units		8.80			10.0	25	
Batch B8A1704 - NO PREP										
Blank (B8A1704-BLK1)		Prepared: 01/17/2018 Analyzed: 01/17/2018								
Specific Conductance (EC)	0.00290		mmhos/cm							
Blank (B8A1704-BLK2)		Prepared: 01/17/2018 Analyzed: 01/17/2018								
Specific Conductance (EC)	0.00290		mmhos/cm							
Duplicate (B8A1704-DUP1)		Source: Y801236-01			Prepared: 01/17/2018 Analyzed: 01/17/2018					
Specific Conductance (EC)	0.261		mmhos/cm		0.284			8.40	25	
Duplicate (B8A1704-DUP2)		Source: Y801236-02			Prepared: 01/17/2018 Analyzed: 01/17/2018					
Specific Conductance (EC)	0.0895		mmhos/cm		0.0987			9.78	25	

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Asher Weinberg
Project Number: FCE005
Project: Critter Creek 5-10H

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-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- 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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