

November 06, 2018

Olsson Associates**James Hix****1525 Raleigh St, Suite 400****Denver****CO 80204****Project Name - GWOG - Colorado State #2****Project Number - 018-**

Attached are your analytical results for GWOG - Colorado State #2 received by Origins Laboratory, Inc. October 29, 2018. This project is associated with Origins project number Y810425-01.

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



Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

James Hix

Project Number: 018-

Project: GWOG - Colorado State #2

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS1N@5.5ft	Y810425-01	Soil	October 29, 2018 12:15	10/29/2018 15:40
SS2S@5.5ft	Y810425-02	Soil	October 29, 2018 12:20	10/29/2018 15:40
SS3E@5.5ft	Y810425-03	Soil	October 29, 2018 12:30	10/29/2018 15:40
SS4B@6.0ft	Y810425-04	Soil	October 29, 2018 12:35	10/29/2018 15:40
SS5W@5.0ft	Y810425-05	Soil	October 29, 2018 12:40	10/29/2018 15:40
SS6NW@2.5ft	Y810425-06	Soil	October 29, 2018 12:50	10/29/2018 15:40
SS7W@1.0ft	Y810425-07	Soil	October 29, 2018 13:00	10/29/2018 15:40

Per the phone call from James on 10-30-18, ORO was added to all samples and pH, EC, and SAR was added to samples SS4B@6.0ft and SS5W@5.0ft.

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

www.originslaboratory.com

Y610425

page 1 of 1

ORIGINS
LABORATORY, INC

Client: Olsson
Address: 1880 Fall River Dr. # 200
Loveland, CO 80538
Telephone Number: 970-635-3727 / 303-5891572
Email Address: j.hix@olsson.com

Project Manager: James Hix
Project Name: GWOG - Colorado State #2
Project Number: 018-
Samples Collected By: James Hix

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #			Other
SS1N @ 5.5 ft	10/29/18	1215	2	✓								✓	1
SS2S @ 5.5 ft	10/29/18	1220	2	✓								✓	2
SS3E @ 5.5 ft	10/29/18	1230	2	✓								✓	3
SS4B @ 6.0 ft	10/29/18	1235 ⁴⁴	3	✓								✓	4
SS5W @ 5.0 ft	10/29/18	1240 ⁴⁴	3	✓								✓	5
SS6NW @ 2.5 ft	10/29/18	1250	2	✓								✓	6
SS7W @ 1.0 ft	10/29/18	1300	2	✓								✓	7
													8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:
James Hix	10/29/18	1540	[Signature]	10/29/18	1540	Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/>

Temp Received- 10.6 Date Results Needed

Origins Laboratory, Inc.

Jen Pellegrini

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Olsson Associates

1525 Raleigh St, Suite 400

Denver CO 80204

James Hix

Project Number: 018-

Project: GWOG - Colorado State #2

Origins Laboratory

F-012207-01-R1

Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: YB10425

Client: Olsson

Client Project ID: GWOG - Colorado State #2

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 10/29/2018

Airbill #: N/A

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

(Describe)

Cooler Number/Temperature: 1 10.6 °C 1 °C 1 °C 1 °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 ⁽¹⁾ ?		<input checked="" type="checkbox"/>		<u>Same Day</u>
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) JG

Date/Time Reviewed 10/30/18

Origins Laboratory, Inc.

Jen Pellegrini

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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS1N@5.5ft

10/29/2018 12:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	5760	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/29/2018	
Residual Range Organics (C28-C40)	2300	200	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl 122 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	482	5.00	mg/kg	25	B8J2904	KDK	10/29/2018	10/29/2018	
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	0.163	0.050	"	"	"	KDK	"	"	
Xylenes, total	0.828	0.050	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 94.4 % 70-130 " " "

Surrogate: Toluene-d8 102 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS2S@5.5ft

10/29/2018 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-02 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/29/2018	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 75.1 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	37.3	5.00	mg/kg	25	B8J2904	KDK	10/29/2018	10/29/2018	
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 85.8 % 70-130 " " "
Surrogate: Toluene-d8 106 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 94.8 % 70-130 " " "

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS3E@5.5ft

10/29/2018 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-03 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/30/2018	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl 74.3 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	19.3	5.00	mg/kg	25	B8J2904	KDK	10/29/2018	10/30/2018	
Benzene	ND	0.050	"	"	"	KDK	"	"	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.050	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4 83.9 % 70-130 " " "
Surrogate: Toluene-d8 106 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 94.1 % 70-130 " " "

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS4B@6.0ft

10/29/2018 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-04 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	6700	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/30/2018	
Residual Range Organics (C28-C40)	2270	200	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	131 %	59-131			"	"	"	"	
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	1550	50.0	mg/kg	250	B8J2904	KDK	10/29/2018	10/30/2018	
Benzene	ND	0.050	"	25	"	KDK	"	10/30/2018	U
Toluene	0.368	0.050	"	"	"	KDK	"	"	
Ethylbenzene	0.546	0.050	"	"	"	KDK	"	"	
Xylenes, total	9.53	0.050	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4	92.3 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	83.4 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	130 %	70-130			"	"	"	"	

Metals (Saturated Paste Prep)

Calcium	8.74	me/L	1	'[none]'			11/01/2018	11/05/2018	
Magnesium	3.45	"	"	"			"	"	
Sodium	138.50	"	"	"			"	"	

pH in Soil by EPA 9045D

pH	8.14	pH Units	1	B8J3003	OLAB		10/30/2018	10/30/2018	
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1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS4B@6.0ft

10/29/2018 12:35:00PM

Analyte	Result	Reporting	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.
Y810425-04 (Soil)

SAR by 20B Saturated Paste

SAR	56.10			1	'[none]'		11/01/2018	11/05/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.806	0.00500	mmhos/cm	1	B8J3004	OLAB	10/30/2018	10/30/2018	
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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS5W@5.0ft

10/29/2018 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	2650	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/30/2018
Residual Range Organics (C28-C40)	835	200	"	"	"	KDK	"	"

Surrogate: o-Terphenyl 129 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	1020	50.0	mg/kg	250	B8J2904	KDK	10/29/2018	10/30/2018
Benzene	0.098	0.050	"	25	"	KDK	"	10/30/2018
Toluene	0.464	0.050	"	"	"	KDK	"	"
Ethylbenzene	1.09	0.050	"	"	"	KDK	"	"
Xylenes, total	7.23	0.050	"	"	"	KDK	"	"

Surrogate: 1,2-Dichloroethane-d4 92.9 % 70-130 " " "
Surrogate: Toluene-d8 94.1 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

Metals (Saturated Paste Prep)

Calcium	4.12		me/L	1	'[none]'		11/01/2018	11/05/2018
Magnesium	4.98		"	"	"		"	"
Sodium	353.47		"	"	"		"	"

pH in Soil by EPA 9045D

pH	8.79		pH Units	1	B8J3003	OLAB	10/30/2018	10/30/2018
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1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS5W@5.0ft

10/29/2018 12:40:00PM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.
Y810425-05 (Soil)

SAR by 20B Saturated Paste

SAR	165.71			1		'[none]'		11/01/2018	11/05/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	1.57	0.00509	mmhos/cm	1		B8J3004	OLAB	10/30/2018	10/30/2018	
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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS6NW@2.5ft

10/29/2018 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y810425-06 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	11000	500	mg/kg	10	B8J2901	KDK	10/29/2018	10/30/2018	
Residual Range Organics (C28-C40)	4470	2000	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl 193 % 59-131 " " " S-02

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	692	50.0	mg/kg	250	B8J2904	KDK	10/29/2018	10/30/2018	
Benzene	ND	0.050	"	25	"	KDK	"	10/30/2018	U
Toluene	0.097	0.050	"	"	"	KDK	"	"	
Ethylbenzene	0.447	0.050	"	"	"	KDK	"	"	
Xylenes, total	3.86	0.050	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 94.3 % 70-130 " " "

Surrogate: Toluene-d8 91.8 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 80.5 % 70-130 " " 10/30/2018

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

SS7W@1.0ft

10/29/2018 1:00:00PM

Analyte	Result	Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y810425-07 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	7890	50.0	mg/kg	1	B8J2901	KDK	10/29/2018	10/30/2018	
Residual Range Organics (C28-C40)	2630	200	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl 148 % 59-131 " " " S-02

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	445	50.0	mg/kg	250	B8J2904	KDK	10/29/2018	10/30/2018	
Benzene	ND	0.050	"	25	"	KDK	"	10/30/2018	U
Toluene	ND	0.050	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.050	"	"	"	KDK	"	"	U
Xylenes, total	0.258	0.050	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4 90.7 % 70-130 " " "

Surrogate: Toluene-d8 100 % 70-130 " " "

Surrogate: 4-Bromofluorobenzene 104 % 70-130 " " "

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

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 B8J2904 - EPA 5030 (soil)										
Blank (B8J2904-BLK1)					Prepared: 10/29/2018 Analyzed: 10/29/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	57		ug/kg	62.5		91.5	70-130			
Surrogate: Toluene-d8	65		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.7	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

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 B8J2904 - EPA 5030 (soil)										
LCS (B8J2904-BS1)					Prepared: 10/29/2018 Analyzed: 10/29/2018					
Benzene	0.096	0.002	mg/kg	0.100		96.2	77.1-124			
Toluene	0.110	0.002	"	0.100		110	74.5-128			
Ethylbenzene	0.099	0.002	"	0.100		99.0	66.4-127			
m,p-Xylene	0.203	0.004	"	0.200		101	76.6-124			
o-Xylene	0.102	0.002	"	0.100		102	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	56		ug/kg	62.5		89.4	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.6	70-130			

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Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

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 B8J2904 - EPA 5030 (soil)

Matrix Spike (B8J2904-MS1)		Source: Y810424-01			Prepared: 10/29/2018 Analyzed: 10/29/2018					
Benzene	0.052	0.002	mg/kg	0.100	ND	51.5	71.8-126			QM-07
Toluene	0.056	0.002	"	0.100	ND	56.4	65.1-130			QM-07
Ethylbenzene	0.049	0.002	"	0.100	ND	49.1	62.2-130			QM-07
m,p-Xylene	0.101	0.004	"	0.200	0.001	50.0	46.5-137			
o-Xylene	0.050	0.002	"	0.100	0.0006	49.5	54.2-134			QM-07
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.1	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.5	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

James Hix
Project Number: 018-
Project: GWOG - Colorado State #2

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 B8J2904 - EPA 5030 (soil)										
Matrix Spike Dup (B8J2904-MSD1)					Source: Y810424-01					
										Prepared: 10/29/2018 Analyzed: 10/29/2018
Benzene	0.098	0.002	mg/kg	0.100	ND	97.9	71.8-126	62.1	11.3	QR-01
Toluene	0.109	0.002	"	0.100	ND	109	65.1-130	63.3	15.4	QR-01
Ethylbenzene	0.094	0.002	"	0.100	ND	94.1	62.2-130	62.8	19.6	QR-01
m,p-Xylene	0.194	0.004	"	0.200	0.001	96.2	46.5-137	62.8	19.2	QR-01
o-Xylene	0.098	0.002	"	0.100	0.0006	97.5	54.2-134	64.9	17.9	QR-01
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		92.8	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		93.8	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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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 B8J2901 - EPA 3550B

Blank (B8J2901-BLK1)

Prepared: 10/29/2018 Analyzed: 10/29/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	36		"	50.0		71.8	59-131			

Blank (B8J2901-BLK2)

Prepared: 10/29/2018 Analyzed: 10/29/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	36		"	50.0		72.8	59-131			

LCS (B8J2901-BS1)

Prepared: 10/29/2018 Analyzed: 10/29/2018

Diesel (C10-C28)	1020	50.0	mg/kg	1000		102	64-121			
Residual Range Organics (C28-C40)	915	200	"	1000		91.5	58-124			
Surrogate: o-Terphenyl	45		"	50.0		91.0	59-131			

LCS (B8J2901-BS2)

Prepared: 10/29/2018 Analyzed: 10/29/2018

Diesel (C10-C28)	983	50.0	mg/kg	1000		98.3	64-121			
Residual Range Organics (C28-C40)	912	200	"	1000		91.2	58-124			
Surrogate: o-Terphenyl	45		"	50.0		90.7	59-131			

Matrix Spike (B8J2901-MS1)

Source: Y810418-01

Prepared: 10/29/2018 Analyzed: 10/29/2018

Diesel (C10-C28)	1120	50.0	mg/kg	1000	168	95.6	53-125			
Residual Range Organics (C28-C40)	1050	200	"	1000	57.9	99.4	47-133			

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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
Batch B8J2901 - EPA 3550B										
Matrix Spike (B8J2901-MS1)		Source: Y810418-01			Prepared: 10/29/2018 Analyzed: 10/29/2018					
Surrogate: o-Terphenyl	52		mg/kg	50.0		104	59-131			
Matrix Spike (B8J2901-MS2)		Source: Y810426-01			Prepared: 10/29/2018 Analyzed: 10/29/2018					
Diesel (C10-C28)	1170	50.0	mg/kg	1000	ND	117	53-125			
Residual Range Organics (C28-C40)	1100	200	"	1000	26.3	107	47-133			
Surrogate: o-Terphenyl	56		"	50.0		111	59-131			
Matrix Spike Dup (B8J2901-MSD1)		Source: Y810418-01			Prepared: 10/29/2018 Analyzed: 10/29/2018					
Diesel (C10-C28)	982	50.0	mg/kg	1000	168	81.3	53-125	16.1	20	
Residual Range Organics (C28-C40)	947	200	"	1000	57.9	88.9	47-133	11.2	20	
Surrogate: o-Terphenyl	46		"	50.0		92.7	59-131			
Matrix Spike Dup (B8J2901-MSD2)		Source: Y810426-01			Prepared: 10/29/2018 Analyzed: 10/29/2018					
Diesel (C10-C28)	1040	50.0	mg/kg	1000	ND	104	53-125	11.4	20	
Residual Range Organics (C28-C40)	1000	200	"	1000	26.3	97.6	47-133	9.47	20	
Surrogate: o-Terphenyl	47		"	50.0		94.7	59-131			

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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 B8J3003 - NO PREP										
Duplicate (B8J3003-DUP1)		Source: Y810428-01			Prepared: 10/30/2018 Analyzed: 10/30/2018					
pH	7.17		pH Units		7.35			2.48	25	
Batch B8J3004 - NO PREP										
Blank (B8J3004-BLK1)		Prepared: 10/30/2018 Analyzed: 10/30/2018								
Specific Conductance (EC)	0.00280	0.00500	mmhos/cm							
Duplicate (B8J3004-DUP1)		Source: Y810428-01			Prepared: 10/30/2018 Analyzed: 10/30/2018					
Specific Conductance (EC)	0.0383	0.00501	mmhos/cm		0.0360			6.19	25	

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James Hix

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Project: GWOG - Colorado State #2

Notes and Definitions

U Sample is Non-Detect.

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.

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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