

December 24, 2019

Olsson Associates

Trent Watne

1525 Raleigh St, Suite 400

Denver CO 80204

Project Name - Grein #1

Project Number - 019-0896

Attached are your analytical results for Grein #1 received by Origins Laboratory, Inc. December 18, 2019. This project is associated with Origins project number Y912319-01.

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
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Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-0896
Project: Grein #1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4	Y912319-01	Water	December 18, 2019 13:45	12/18/2019 14:55
MW-2	Y912319-02	Water	December 18, 2019 14:05	12/18/2019 14:55

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

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 Project Number: 019-0896
 Project: Grein #1

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 4912319 Client: Olsson
 Client Project ID: Grein #1
 Checklist Completed by: JP Shipped Via: HD
 Date/time completed: 12/18/19 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: NA
 Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1 / 5.1 °c / _____ °c / _____ °c / _____ °c (Describe)
 Thermometer ID: TC03

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	X			
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		Y		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		X		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
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 HNO3, HCl, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)	X			HC
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: [Signature] (Project Manager) Date/Time Reviewed: 12-19-19

Origins Laboratory, Inc.

Jefe Pellegrini

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Trent Watne
 Project Number: 019-0896
 Project: Grein #1

MW-4

12/18/2019 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912319-01 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L1911	KDK	12/19/2019	12/20/2019	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	123 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.2 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	99.6 %	70-130			"	"	"	"	

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Trent Watne
 Project Number: 019-0896
 Project: Grein #1

MW-2

12/18/2019 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y912319-02 (Water)

BTEX by EPA 8260D

Benzene	ND	1.00	ug/L	1	B9L1911	KDK	12/19/2019	12/20/2019	U
Toluene	ND	1.00	"	"	"	KDK	"	"	U
Ethylbenzene	ND	1.00	"	"	"	KDK	"	"	U
Xylenes, total	ND	1.00	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	123 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	98.8 %	70-130			"	"	"	"	

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Trent Watne
 Project Number: 019-0896
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Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9L1911 - EPA 5030B (Water)

Blank (B9L1911-BLK1)

Prepared: 12/19/2019 Analyzed: 12/20/2019

Benzene	ND	1.00	ug/L							U
Toluene	ND	1.00	"							U
Ethylbenzene	ND	1.00	"							U
Xylenes, total	ND	1.00	"							U
Surrogate: 1,2-Dichloroethane-d4	71		"	62.5	113		70-130			
Surrogate: Toluene-d8	64		"	62.5	102		70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5	99.6		70-130			

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Volatile Organic Compounds by GC/MS SW846 8260D - 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 B9L1911 - EPA 5030B (Water)

LCS (B9L1911-BS1)

Prepared: 12/19/2019 Analyzed: 12/20/2019

Benzene	47.2	1.00	ug/L	50.0		94.5	70-130			
Toluene	46.3	1.00	"	50.0		92.6	70-130			
Ethylbenzene	42.0	1.00	"	50.0		84.0	70-130			
m,p-Xylene	82.1	2.00	"	100		82.1	70-130			
o-Xylene	40.8	1.00	"	50.0		81.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	71		"	62.5		113	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.2	70-130			

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Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L1911 - EPA 5030B (Water)

Matrix Spike (B9L1911-MS1)	Source: Y912317-02			Prepared: 12/19/2019 Analyzed: 12/20/2019						
Benzene	46.2	1.00	ug/L	50.0	0.120	92.1	70-130			
Toluene	43.5	1.00	"	50.0	0.320	86.4	70-130			
Ethylbenzene	40.4	1.00	"	50.0	3.89	73.0	70-130			
m,p-Xylene	75.3	2.00	"	100	0.370	75.0	70-130			
o-Xylene	37.6	1.00	"	50.0	ND	75.2	70-130			
Surrogate: Toluene-d8	60		"	62.5		95.7	70-130			
Surrogate: 4-Bromofluorobenzene	59		"	62.5		94.5	70-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9L1911 - EPA 5030B (Water)

Matrix Spike Dup (B9L1911-MSD1)	Source: Y912317-02			Prepared: 12/19/2019 Analyzed: 12/20/2019						
Benzene	44.1	1.00	ug/L	50.0	0.120	88.0	70-130	4.54	20	
Toluene	43.9	1.00	"	50.0	0.320	87.2	70-130	0.983	20	
Ethylbenzene	42.1	1.00	"	50.0	3.89	76.3	70-130	4.00	20	
m,p-Xylene	77.0	2.00	"	100	0.370	76.7	70-130	2.24	20	
o-Xylene	39.8	1.00	"	50.0	ND	79.7	70-130	5.84	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		103	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		95.6	70-130			

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Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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