



January 10, 2020

Olsson Associates

Trent Watne

1525 Raleigh St, Suite 400

Denver

CO 80204

Project Name - Dunham 41-5 Flowline Release

Project Number - 019-2448

Attached are your analytical results for Dunham 41-5 Flowline Release received by Origins Laboratory, Inc. January 09, 2020. This project is associated with Origins project number Y001102-01.

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: 019-2448

Project: Dunham 41-5 Flowline Release

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NSW-5	Y001102-01	Soil	January 9, 2020 9:40	01/09/2020 11:01

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Trent Watne
Project Number: 019-2448
Project: Dunham 41-5 Flowline Release

[illegible]

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2448
Project: Dunham 41-5 Flowline Release

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y001102

Client: Olsson

Client Project ID: Dunham 41-5

Checklist Completed by: JG

Shipped Via: HD

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

Date/time completed: 1 / 9 / 2020

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid

☐ Water

☐ Other:

(Describe)

Cooler Number/Temperature: 1 / 2.3 °C / °C / °C / °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽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) [Signature]

Date/Time Reviewed 1/9/20

Origins Laboratory, Inc.

Jefe Pellegrini

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Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2448
Project: Dunham 41-5 Flowline Release

NSW-5

1/9/2020 9:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y001102-01 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.0500	mg/kg	25	B0A0905	KDK	01/09/2020	01/09/2020	U
Toluene	ND	0.0500	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.0500	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.0500	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	6.14	5.00	"	"	"	KDK	"	"	

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"
Surrogate: Toluene-d8	101 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	99.3 %	70-130			"	"	"

Diesel Range Organics (DRO/TEPH) by EPA 8015D

Diesel (C10-C28)	ND	25.0	mg/kg	1	B0A0906	KDK	01/09/2020	01/09/2020	U
Surrogate: o-Terphenyl	66.2 %	50-150			"	"	"		

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Trent Watne
Project Number: 019-2448
Project: Dunham 41-5 Flowline Release

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
Batch B0A0905 - EPA 5030 (soil)										
Blank (B0A0905-BLK1)					Prepared: 01/09/2020 Analyzed: 01/09/2020					
Benzene	ND	0.00200	mg/kg							U
Toluene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	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
Batch B0A0905 - EPA 5030 (soil)										
LCS (B0A0905-BS1)					Prepared: 01/09/2020 Analyzed: 01/09/2020					
Benzene	0.0991	0.00200	mg/kg	0.100		99.1	70-130			
Toluene	0.100	0.00200	"	0.100		100	70-130			
Ethylbenzene	0.0952	0.00200	"	0.100		95.2	70-130			
m,p-Xylene	0.192	0.00400	"	0.200		96.1	70-130			
o-Xylene	0.0975	0.00200	"	0.100		97.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	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 B0A0905 - EPA 5030 (soil)

Matrix Spike (B0A0905-MS1)		Source: Y001105-01			Prepared: 01/09/2020 Analyzed: 01/09/2020					
Benzene	0.103	0.00200	mg/kg	0.100	ND	103	70-130			
Toluene	0.106	0.00200	"	0.100	ND	106	70-130			
Ethylbenzene	0.104	0.00200	"	0.100	ND	104	70-130			
m,p-Xylene	0.211	0.00400	"	0.200	ND	106	70-130			
o-Xylene	0.104	0.00200	"	0.100	ND	104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	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 B0A0905 - EPA 5030 (soil)

Matrix Spike Dup (B0A0905-MSD1)		Source: Y001105-01			Prepared: 01/09/2020 Analyzed: 01/09/2020					
Benzene	0.102	0.00200	mg/kg	0.100	ND	102	70-130	0.547	20	
Toluene	0.105	0.00200	"	0.100	ND	105	70-130	1.00	20	
Ethylbenzene	0.104	0.00200	"	0.100	ND	104	70-130	0.153	20	
m,p-Xylene	0.212	0.00400	"	0.200	ND	106	70-130	0.0284	20	
o-Xylene	0.102	0.00200	"	0.100	ND	102	70-130	1.43	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		99.4	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	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 B0A0906 - EPA 3580

Blank (B0A0906-BLK1)

Prepared: 01/09/2020 Analyzed: 01/09/2020

Diesel (C10-C28)	ND	25.0	mg/kg							U
Surrogate: o-Terphenyl	21		"	25.0		82.0	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B0A0906 - EPA 3580

LCS (B0A0906-BS1)

Prepared: 01/09/2020 Analyzed: 01/09/2020

Diesel (C10-C28)	825	50.0	mg/kg	1000		82.5	70-130			
Surrogate: o-Terphenyl	41		"	50.0		82.0	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B0A0906 - EPA 3580

Matrix Spike (B0A0906-MS1)		Source: Y001105-01			Prepared: 01/09/2020 Analyzed: 01/09/2020					
Diesel (C10-C28)	819	50.0	mg/kg	1000	ND	81.9	70-130			
Surrogate: o-Terphenyl	38		"	50.0		75.3	50-150			

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Extractable Petroleum Hydrocarbons by 8015D - 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 B0A0906 - EPA 3580

Matrix Spike Dup (B0A0906-MSD1)		Source: Y001105-01			Prepared: 01/09/2020 Analyzed: 01/09/2020					
Diesel (C10-C28)	860	50.0	mg/kg	1000	ND	86.0	70-130	4.81	35	
Surrogate: o-Terphenyl	40		"	50.0		80.7	50-150			

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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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