

September 17, 2019

Olsson Associates

Trent Watne

1525 Raleigh St, Suite 400

Denver

CO 80204

Project Name - Rio OBM Spill

Project Number - 019-2354

Attached are your analytical results for Rio OBM Spill received by Origins Laboratory, Inc. September 13, 2019. This project is associated with Origins project number Y909214-01.

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

Trent Watne

Project Number: 019-2354

Project: Rio OBM Spill

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EastMiddle	Y909214-01	Soil	September 13, 2019 12:40	09/13/2019 17:30
EastSouth	Y909214-02	Soil	September 13, 2019 12:45	09/13/2019 17:30
EastNorth	Y909214-03	Soil	September 13, 2019 12:50	09/13/2019 17:30
NWNorth	Y909214-04	Soil	September 13, 2019 14:00	09/13/2019 17:30
NWEast	Y909214-05	Soil	September 13, 2019 14:05	09/13/2019 17:30
NWWest	Y909214-06	Soil	September 13, 2019 14:10	09/13/2019 17:30
NWSouth	Y909214-07	Soil	September 13, 2019 14:15	09/13/2019 17:30
NWCenter	Y909214-08	Soil	September 13, 2019 14:20	09/13/2019 17:30

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.

Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

Y909214

Chain of Custody

olsson

PROJECT NAME: Rio OBM Spill		PROJECT NUMBER: 019-2354	Turn Around Time (check)		DISPOSAL	By Lab	PAGE	1	of	1
COMPANY NAME: Olsson		PHONE NUMBER: 303-237-2072	Standard		LAB USE ONLY: Temperature upon receipt: 26.3					
ADDRESS: 1525 Raleigh St, Suite 400		CITY/STATE/ZIP: Denver, CO 80204	72hr		Custody seals in tact: Yes No N/A					
PROJECT MANAGER: Trent Watne		PM EMAIL: twatne@olsson.com	48hr							
SAMPLER: Trent Watne			24hr							
			Same Day							

DIRECT BILL CLIENT?		CLIENT COMPANY:	
YES: <input type="checkbox"/>	NO: <input checked="" type="checkbox"/>		
SEND COPY OF ANALYTICAL TO CLIENT?		CLIENT NAME:	
YES: <input type="checkbox"/>	NO: <input checked="" type="checkbox"/>		
		CLIENT EMAIL:	
		CLIENT PROJECT #:	

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Notes
	EASTMIDDLE	Soil	9/13/2019	1240	2	
	EAST SOUTH			1245	1	
	EAST NORTH			1250	1	
	NW NORTH			1400	1	
	NW EAST			1405	1	
	NW WEST			1410	1	
	NW SOUTH			1415	1	
	NW CENTER			1420	1	

Comments:		QC PACKAGE (check below)	
		<input checked="" type="checkbox"/> LEVEL I (Standard OC) <input type="checkbox"/> LEVEL II (SM OC + Ions) <input type="checkbox"/> LEVEL IV (Std OC + Ions + raw data)	

RELINQUISHED BY	PRINTED NAME	SIGNATURE	DATE	TIME
	Trent Watne	<i>Trent Watne</i>	9/13/19	1730
RECEIVED BY	JASON GUERIN	<i>Jason Guerin</i>	9/13/19	1730
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				

Origins Laboratory, Inc.

Jen Pellegrini

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Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 909214

Client: Olsson

Client Project ID: Rio OBM

Checklist Completed by: JG

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 9/16/2019

Airbill #: N/A

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

Cooler Number/Temperature: 1 26.3 °C 1 °C 1 °C (Describe) _____ °C

Thermometer ID: T903

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>See Box</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 9/17/19

Origins Laboratory, Inc.

Jen Pellegrini

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Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

EastMiddle

9/13/2019 12:40:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y909214-01 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130	"	"	"
Surrogate: Toluene-d8	100 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	70-130	"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/16/2019	U
Surrogate: o-Terphenyl	84.0 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

EastSouth

9/13/2019 12:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y909214-02 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	70-130	"	"	"
Surrogate: Toluene-d8	99.7 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	108 %	70-130	"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/16/2019	U
Surrogate: o-Terphenyl	82.1 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

EastNorth

9/13/2019 12:50:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y909214-03 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	105 %	70-130			"	"	"
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	107 %	70-130			"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/16/2019	U
Surrogate: o-Terphenyl	79.4 %	50-150			"	"	"		

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

NWNorth
9/13/2019 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y909214-04 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %	70-130			"	"	"
Surrogate: Toluene-d8	99.7 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	107 %	70-130			"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/17/2019	U
Surrogate: o-Terphenyl	78.9 %	50-150			"	"	"		

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

NWEast

9/13/2019 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y909214-05 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	110 %	70-130	"	"	"
Surrogate: Toluene-d8	97.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	105 %	70-130	"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/17/2019	U
Surrogate: o-Terphenyl	83.2 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

NWWest

9/13/2019 2:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y909214-06 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	118 %	70-130			"	"	"
Surrogate: Toluene-d8	97.0 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	70-130			"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/17/2019	U
Surrogate: o-Terphenyl	79.0 %	50-150			"	"	"		

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

NWSouth
9/13/2019 2:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y909214-07 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	119 %	70-130	"	"	"
Surrogate: Toluene-d8	96.6 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	70-130	"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/17/2019	U
Surrogate: o-Terphenyl	88.4 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

NWCenter
9/13/2019 2:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y909214-08 (Soil)

BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I1609	KDK	09/16/2019	09/17/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	121 %	70-130	"	"	"
Surrogate: Toluene-d8	96.4 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	106 %	70-130	"	"	"

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

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I1610	KDK	09/16/2019	09/17/2019	U
Surrogate: o-Terphenyl	83.4 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1609 - EPA 5030 (soil)										
Blank (B9I1609-BLK1)					Prepared: 09/16/2019 Analyzed: 09/16/2019					
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	0.12		"	0.125		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		102	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1609 - EPA 5030 (soil)

LCS (B9I1609-BS1)

Prepared: 09/16/2019 Analyzed: 09/16/2019

Benzene	0.115	0.00200	mg/kg	0.100		115	70-130			
Toluene	0.0993	0.00200	"	0.100		99.3	70-130			
Ethylbenzene	0.104	0.00200	"	0.100		104	70-130			
m,p-Xylene	0.182	0.00400	"	0.200		90.9	70-130			
o-Xylene	0.101	0.00200	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		98.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		105	70-130			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1609 - EPA 5030 (soil)

Matrix Spike (B9I1609-MS1)		Source: Y909213-01			Prepared: 09/16/2019 Analyzed: 09/17/2019					
Benzene	0.105	0.00200	mg/kg	0.100	ND	105	70-130			
Toluene	0.0945	0.00200	"	0.100	ND	94.5	70-130			
Ethylbenzene	0.0961	0.00200	"	0.100	0.000820	95.2	70-130			
m,p-Xylene	0.172	0.00400	"	0.200	0.000960	85.3	70-130			
o-Xylene	0.0941	0.00200	"	0.100	0.000640	93.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		107	70-130			

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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1609 - EPA 5030 (soil)										
Matrix Spike Dup (B9I1609-MSD1)					Source: Y909213-01					Prepared: 09/16/2019 Analyzed: 09/17/2019
Benzene	0.107	0.00200	mg/kg	0.100	ND	107	70-130	2.11	20	
Toluene	0.0958	0.00200	"	0.100	ND	95.8	70-130	1.30	20	
Ethylbenzene	0.0988	0.00200	"	0.100	0.000820	97.9	70-130	2.77	20	
m,p-Xylene	0.177	0.00400	"	0.200	0.000960	88.2	70-130	3.27	20	
o-Xylene	0.0971	0.00200	"	0.100	0.000640	96.5	70-130	3.10	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		96.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		107	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, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1610 - EPA 3580

Blank (B9I1610-BLK1)

Prepared: 09/16/2019 Analyzed: 09/16/2019

Diesel (C10-C28)	ND	25.0	mg/kg							U
Surrogate: o-Terphenyl	29		"	25.0		117	50-150			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1610 - EPA 3580

LCS (B9I1610-BS1)

Prepared: 09/16/2019 Analyzed: 09/16/2019

Diesel (C10-C28)	988	50.0	mg/kg	1000		98.8	70-130			
Surrogate: o-Terphenyl	53		"	50.0		105	50-150			

Origins Laboratory, Inc.



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Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1610 - EPA 3580

Matrix Spike (B9I1610-MS1)		Source: Y909208-01			Prepared: 09/16/2019 Analyzed: 09/16/2019					
Diesel (C10-C28)	975	50.0	mg/kg	1000	44.6	93.0	70-130			
Surrogate: o-Terphenyl	50		"	50.0		99.3	50-150			

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

Olsson Associates
1525 Raleigh St, Suite 400
Denver CO 80204

Trent Watne
Project Number: 019-2354
Project: Rio OBM Spill

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 B9I1610 - EPA 3580

Matrix Spike Dup (B9I1610-MSD1)		Source: Y909208-01			Prepared: 09/16/2019 Analyzed: 09/16/2019					
Diesel (C10-C28)	848	50.0	mg/kg	1000	44.6	80.3	70-130	14.0	35	
Surrogate: o-Terphenyl	43		"	50.0		85.0	50-150			

Origins Laboratory, Inc.



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1525 Raleigh St, Suite 400

Denver CO 80204

Trent Watne

Project Number: 019-2354

Project: Rio OBM Spill

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.

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager