

February 20, 2018

SRC Energy

Dave Castro

5400 W 11th Street

Greely

CO 80634

Project Name - Ikenouye-Soco TB Vault West

Project Number - [none]

Attached are your analytical results for Ikenouye-Soco TB Vault West received by Origins Laboratory, Inc. February 14, 2018. This project is associated with Origins project number Y802197-01.

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



SRC Energy
5400 W 11th Street
Greely CO 80634

Dave Castro
Project Number: [none]
Project: Ikenouye-Soco TB Vault West

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WSS@2.5'	Y802197-01	Soil	February 13, 2018 11:07	02/14/2018 16:44
BSS@7'	Y802197-02	Soil	February 13, 2018 11:10	02/14/2018 16:44

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

SRC Energy
 5400 W 11th Street
 Greeley CO 80634

Dave Castro
 Project Number: [none]
 Project: Ikenouye-Soco TB Vault West

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y802197

Client: SRC

Client Project ID: Ikenouye-Soco TB Vault West

Checklist Completed by: Joe Henderson

Shipped Via: 4/P
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 2/14/18

Airbill #: N/A

Matrix(s) Received: (Check all that apply): 1 Soil/Solid Water Other:
 (Describe)

Cooler Number/Temperature: 1 / 5.9 °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"/>			
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"/>			pH
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 HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+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.

[Signature]
 Reviewed by (Project Manager)

2/14/18
 Date/Time Reviewed

Origins Laboratory, Inc.

[Signature]

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SRC Energy
 5400 W 11th Street
 Greely CO 80634

Dave Castro
 Project Number: [none]
 Project: Ikenouye-Soco TB Vault West

WSS@2.5'
2/13/2018 11:07:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802197-01 (Soil)

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

Diesel (C10-C28)	396	50.0	mg/kg	1	B8B1402	02/14/2018	02/15/2018
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<i>Surrogate: o-Terphenyl</i>	96.3 %	59-131			"	"	"
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GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	203	5.00	mg/kg	25	B8B1401	02/14/2018	02/14/2018
Benzene	0.072	0.050	"	"	"	"	"
Toluene	2.98	0.050	"	"	"	"	"
Ethylbenzene	0.975	0.050	"	"	"	"	"
Xylenes, total	14.7	0.050	"	"	"	"	"

<i>Surrogate: 1,2-Dichloroethane-d4</i>	104 %	70-130			"	"	"
<i>Surrogate: Toluene-d8</i>	89.3 %	70-130			"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>	120 %	70-130			"	"	"

Metals (Saturated Paste Prep)

Calcium	0.69		me/L	1	'[none]'	02/16/2018	02/19/2018
Magnesium	0.72		"	"	"	"	"
Sodium	3.53		"	"	"	"	"

pH in Soil by EPA 9045D

pH	8.71		pH Units	1	B8B1410	02/14/2018	02/14/2018
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SRC Energy
5400 W 11th Street
Greely CO 80634

Dave Castro
Project Number: [none]
Project: Ikenouye-Soco TB Vault West

WSS@2.5'

2/13/2018 11:07:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802197-01 (Soil)

SAR by 20B Saturated Paste

SAR	4.20			1	'[none]'	02/16/2018	02/19/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0978		mmhos/cm	1	B8B1411	02/14/2018	02/14/2018	
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Jen Pellegrini, Project Manager

SRC Energy
 5400 W 11th Street
 Greely CO 80634

Dave Castro
 Project Number: [none]
 Project: Ikenouye-Soco TB Vault West

BSS@7'
2/13/2018 11:10:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y802197-02 (Soil)

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

Diesel (C10-C28)	694	50.0	mg/kg	1	B8B1402	02/14/2018	02/15/2018	
Surrogate: <i>o</i> -Terphenyl	92.4 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	106	5.00	mg/kg	25	B8B1401	02/14/2018	02/14/2018	
Benzene	ND	0.050	"	"	"	"	"	U
Toluene	0.472	0.050	"	"	"	"	"	
Ethylbenzene	0.188	0.050	"	"	"	"	"	
Xylenes, total	4.28	0.050	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4	103 %	70-130			"	"	"	
Surrogate: Toluene-d8	96.4 %	70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	109 %	70-130			"	"	"	

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SRC Energy
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 Greely CO 80634

Dave Castro
 Project Number: [none]
 Project: Ikenouye-Soco TB Vault West

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 B8B1401 - EPA 5030 (soil)										
Blank (B8B1401-BLK1)										
					Prepared: 02/14/2018 Analyzed: 02/14/2018					
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	66		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Dave Castro
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 Project: Ikenouye-Soco TB Vault West

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 B8B1401 - EPA 5030 (soil)

LCS (B8B1401-BS1)

Prepared: 02/14/2018 Analyzed: 02/14/2018

Benzene	0.099	0.002	mg/kg	0.100		99.0	77.1-124			
Toluene	0.096	0.002	"	0.100		95.9	74.5-128			
Ethylbenzene	0.095	0.002	"	0.100		95.2	66.4-127			
m,p-Xylene	0.194	0.004	"	0.200		96.9	76.6-124			
o-Xylene	0.095	0.002	"	0.100		95.3	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	61		ug/kg	62.5		97.9	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		97.7	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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Batch B8B1401 - EPA 5030 (soil)

Matrix Spike (B8B1401-MS1)	Source: Y802189-01			Prepared: 02/14/2018 Analyzed: 02/14/2018						
Benzene	0.107	0.002	mg/kg	0.100	0.003	104	71.8-126			
Toluene	0.125	0.002	"	0.100	0.044	81.6	65.1-130			
Ethylbenzene	0.194	0.002	"	0.100	0.114	79.3	62.2-130			
m,p-Xylene	0.616	0.004	"	0.200	0.456	79.7	46.5-137			
o-Xylene	0.244	0.002	"	0.100	0.190	54.2	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	65		ug/kg	62.5		103	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.6	70-130			
Surrogate: 4-Bromofluorobenzene	86		"	62.5		137	70-130			S-04

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Dave Castro
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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
Batch B8B1401 - EPA 5030 (soil)										
Matrix Spike Dup (B8B1401-MSD1)			Source: Y802189-01			Prepared: 02/14/2018 Analyzed: 02/14/2018				
Benzene	0.111	0.002	mg/kg	0.100	0.003	108	71.8-126	3.49	11.3	
Toluene	0.137	0.002	"	0.100	0.044	93.8	65.1-130	9.31	15.4	
Ethylbenzene	0.262	0.002	"	0.100	0.114	147	62.2-130	29.8	19.6	QM-07, QR-03
m,p-Xylene	0.820	0.004	"	0.200	0.456	182	46.5-137	28.5	19.2	QM-07, QR-03
o-Xylene	0.336	0.002	"	0.100	0.190	146	54.2-134	31.7	17.9	QM-07, QR-03
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5	111		70-130			
Surrogate: Toluene-d8	57		"	62.5	91.1		70-130			
Surrogate: 4-Bromofluorobenzene	110		"	62.5	181		70-130			S-04

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Dave Castro
 Project Number: [none]
 Project: Ikenouye-Soco TB Vault West

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 B8B1402 - EPA 3550B

Blank (B8B1402-BLK1)

Prepared: 02/14/2018 Analyzed: 02/14/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	37		"	50.0		73.9	59-131			

LCS (B8B1402-BS1)

Prepared: 02/14/2018 Analyzed: 02/14/2018

Diesel (C10-C28)	882	50.0	mg/kg	1000		88.2	64-121			
Surrogate: o-Terphenyl	44		"	50.0		88.7	59-131			

Matrix Spike (B8B1402-MS1)

Source: Y802189-01

Prepared: 02/14/2018 Analyzed: 02/14/2018

Diesel (C10-C28)	1490	50.0	mg/kg	1000	529	96.3	53-125			
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

Matrix Spike Dup (B8B1402-MSD1)

Source: Y802189-01

Prepared: 02/14/2018 Analyzed: 02/15/2018

Diesel (C10-C28)	1460	50.0	mg/kg	1000	529	93.2	53-125	2.06	20	
Surrogate: o-Terphenyl	52		"	50.0		104	59-131			

Origins Laboratory, Inc.



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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 B8B1410 - NO PREP										
Duplicate (B8B1410-DUP1)		Source: Y802195-01			Prepared: 02/14/2018 Analyzed: 02/14/2018					
pH	8.41		pH Units		8.42			0.119	25	
Batch B8B1411 - NO PREP										
Blank (B8B1411-BLK1)		Prepared: 02/14/2018 Analyzed: 02/14/2018								
Specific Conductance (EC)	0.00250		mmhos/cm							
Duplicate (B8B1411-DUP1)		Source: Y802195-01			Prepared: 02/14/2018 Analyzed: 02/14/2018					
Specific Conductance (EC)	0.0879		mmhos/cm		0.0796			9.91	25	

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Jen Pellegrini, Project Manager

SRC Energy
5400 W 11th Street
Greely CO 80634

Dave Castro
Project Number: [none]
Project: Ikenouye-Soco TB Vault West

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-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- 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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Jen Pellegrini, Project Manager