

August 02, 2018

Olsson Associates**Jason Davidson****4690 Table Mountain Drive****Golden CO 80403****Project Name - GWOC Kraus Albin #22-20****Project Number - 018-0459**

Attached are your analytical results for GWOC Kraus Albin #22-20 received by Origins Laboratory, Inc. July 30, 2018. This project is associated with Origins project number Y807425-01.

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

4690 Table Mountain Drive

Golden CO 80403

Jason Davidson

Project Number: 018-0459

Project: GWOC Kraus Albin #22-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	Y807425-01	Water	July 30, 2018 11:30	07/30/2018 15:50
MW-3	Y807425-02	Water	July 30, 2018 11:50	07/30/2018 15:50

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Jason Davidson
Project Number: 018-0459
Project: GWOC Kraus Albin #22-20

[illegible]

Origins Laboratory, Inc.

Jeff Pellgrini

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Project Number: 018-0459

Project: GWOC Kraus Albin #22-20

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y907425

Client: Olsson

Client Project ID: GWOC #Kraus Albin #22-20

Checklist Completed by: JG

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

Date/time completed: 7/31/2018

Airbill #: N/A

Matrix(s) Received: (Check all that apply): 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 ≤ 5°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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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 8/1/18

Origins Laboratory, Inc.

Jefe Pellegrini

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4690 Table Mountain Drive
Golden CO 80403

Jason Davidson
Project Number: 018-0459
Project: GWOC Kraus Albin #22-20

MW-2

7/30/2018 11:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y807425-01 (Water)

BTEX by EPA 8260C

Benzene	271	4.00	ug/L	4	B8H0107	JTD	08/01/2018	08/02/2018
Toluene	10.2	1.00	"	1	"	JTD	"	08/02/2018
Ethylbenzene	5.71	1.00	"	"	"	JTD	"	"
Xylenes, total	60.6	1.00	"	"	"	JTD	"	"

Surrogate: 1,2-Dichloroethane-d4	96.7 %	84-121	"	"	08/02/2018
Surrogate: Toluene-d8	101 %	85-115	"	"	08/02/2018
Surrogate: 4-Bromofluorobenzene	109 %	84-114	"	"	"

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Jason Davidson
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Project: GWOC Kraus Albin #22-20

MW-3

7/30/2018 11:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc. Y807425-02 (Water)

BTEX by EPA 8260C

Benzene	ND	1.00	ug/L	1	B8H0107	JTD	08/01/2018	08/02/2018	U
Toluene	ND	1.00	"	"	"	JTD	"	"	U
Ethylbenzene	ND	1.00	"	"	"	JTD	"	"	U
Xylenes, total	ND	1.00	"	"	"	JTD	"	"	U

Surrogate: 1,2-Dichloroethane-d4	103 %	84-121	"	"	"
Surrogate: Toluene-d8	99.5 %	85-115	"	"	"
Surrogate: 4-Bromofluorobenzene	108 %	84-114	"	"	"

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Jason Davidson
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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 B8H0107 - EPA 5030B (Water)										
Blank (B8H0107-BLK1)					Prepared: 08/01/2018 Analyzed: 08/01/2018					
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	65		"	62.5	104		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	63		"	62.5	101		84-114			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8H0107 - EPA 5030B (Water)										
Blank (B8H0107-BLK2)					Prepared: 08/01/2018 Analyzed: 08/01/2018					
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	66		"	62.5	106		84-121			
Surrogate: Toluene-d8	63		"	62.5	101		85-115			
Surrogate: 4-Bromofluorobenzene	68		"	62.5	109		84-114			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8H0107 - EPA 5030B (Water)										
LCS (B8H0107-BS1)					Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	55.5	1.00	ug/L	50.0		111	73.3-129			
Toluene	56.5	1.00	"	50.0		113	76.2-123			
Ethylbenzene	48.2	1.00	"	50.0		96.4	73.6-130			
m,p-Xylene	97.3	2.00	"	100		97.3	76.1-126			
o-Xylene	47.0	1.00	"	50.0		93.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	70		"	62.5		113	84-121			
Surrogate: Toluene-d8	65		"	62.5		104	85-115			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		112	84-114			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8H0107 - EPA 5030B (Water)										
LCS (B8H0107-BS2)					Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	48.9	1.00	ug/L	50.0		97.7	73.3-129			
Toluene	51.5	1.00	"	50.0		103	76.2-123			
Ethylbenzene	41.7	1.00	"	50.0		83.5	73.6-130			
m,p-Xylene	85.9	2.00	"	100		85.9	76.1-126			
o-Xylene	42.4	1.00	"	50.0		84.9	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	70		"	62.5		112	84-121			
Surrogate: Toluene-d8	66		"	62.5		105	85-115			
Surrogate: 4-Bromofluorobenzene	69		"	62.5		110	84-114			

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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 B8H0107 - EPA 5030B (Water)

Matrix Spike (B8H0107-MS1)		Source: Y807424-05			Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	46.3	1.00	ug/L	50.0	ND	92.6	74-130			
Toluene	48.3	1.00	"	50.0	ND	96.6	73-131			
Ethylbenzene	38.2	1.00	"	50.0	0.090	76.3	76-132			
m,p-Xylene	79.9	2.00	"	100	0.190	79.7	69-139			
o-Xylene	40.5	1.00	"	50.0	0.140	80.7	74-131			
Surrogate: 1,2-Dichloroethane-d4	61		"	62.5		98.0	84-121			
Surrogate: Toluene-d8	66		"	62.5		106	85-115			
Surrogate: 4-Bromofluorobenzene	71		"	62.5		114	84-114			

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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 B8H0107 - EPA 5030B (Water)

Matrix Spike (B8H0107-MS2)		Source: Y807424-08			Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	48.1	1.00	ug/L	50.0	0.160	96.0	74-130			
Toluene	50.9	1.00	"	50.0	ND	102	73-131			
Ethylbenzene	42.2	1.00	"	50.0	0.210	83.9	76-132			
m,p-Xylene	87.1	2.00	"	100	ND	87.1	69-139			
o-Xylene	43.4	1.00	"	50.0	ND	86.7	74-131			
Surrogate: 1,2-Dichloroethane-d4	72		"	62.5		116	84-121			
Surrogate: Toluene-d8	64		"	62.5		103	85-115			
Surrogate: 4-Bromofluorobenzene	71		"	62.5		113	84-114			

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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 B8H0107 - EPA 5030B (Water)

Matrix Spike Dup (B8H0107-MSD1)		Source: Y807424-05			Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	49.5	1.00	ug/L	50.0	ND	99.1	74-130	6.76	20	
Toluene	51.6	1.00	"	50.0	ND	103	73-131	6.53	20	
Ethylbenzene	42.0	1.00	"	50.0	0.090	83.8	76-132	9.40	20	
m,p-Xylene	85.8	2.00	"	100	0.190	85.6	69-139	7.05	20	
o-Xylene	43.4	1.00	"	50.0	0.140	86.6	74-131	7.03	20	
Surrogate: 1,2-Dichloroethane-d4	71		"	62.5		113	84-121			
Surrogate: Toluene-d8	66		"	62.5		105	85-115			
Surrogate: 4-Bromofluorobenzene	72		"	62.5		114	84-114			

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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 B8H0107 - EPA 5030B (Water)

Matrix Spike Dup (B8H0107-MSD2)		Source: Y807424-08			Prepared: 08/01/2018 Analyzed: 08/01/2018					
Benzene	50.4	1.00	ug/L	50.0	0.160	100	74-130	4.53	20	
Toluene	52.9	1.00	"	50.0	ND	106	73-131	3.74	20	
Ethylbenzene	43.6	1.00	"	50.0	0.210	86.9	76-132	3.45	20	
m,p-Xylene	89.6	2.00	"	100	ND	89.6	69-139	2.87	20	
o-Xylene	44.6	1.00	"	50.0	ND	89.3	74-131	2.86	20	
Surrogate: 1,2-Dichloroethane-d4	64		"	62.5		102	84-121			
Surrogate: Toluene-d8	64		"	62.5		102	85-115			
Surrogate: 4-Bromofluorobenzene	70		"	62.5		112	84-114			

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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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Jen Pellegrini For Noelle Doyle Mathis, President