



Quandary Consultants

October 24, 2024

Mike Dinkel

2252 Emerson St.

Denver CO 80205

Project Name - **KMG - Goodin 15N 15N 16N
16N-B6HZ**

Project Number - **[none]**

Attached are your analytical results for KMG - Goodin 15N 15N 16N 16N-B6HZ received by Origins Laboratory October 23, 2024. This project is associated with Origins project number E410725-01.

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
303.433.1322
projectmanager@originslab.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Mike Dinkel
Project Number: [none]
Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP-B01V@5'	E410725-01	Soil	October 23, 2024 10:10	10/23/2024 12:36
SS-01NV@3'	E410725-02	Soil	October 23, 2024 10:23	10/23/2024 12:36
SS-01EV@3'	E410725-03	Soil	October 23, 2024 10:34	10/23/2024 12:36
SS-01SV@3'	E410725-04	Soil	October 23, 2024 10:40	10/23/2024 12:36
SS-01WV@3'	E410725-05	Soil	October 23, 2024 10:15	10/23/2024 12:36

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Mike Dinkel
 Project Number: [none]
 Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

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

Sample Receipt Checklist

Origins Work Order: E410725 Client: Quandary
 Client Project ID: Goodin

Checklist Completed by: ZHO KK Shipped Via: HO
 Date/time completed: 10/23/24 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: _____
 Cooler Number/Temperature: 1524 °C °C °C °C (Describe)
 Thermometer ID: 7004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ^{(1)?}	/			SD
Is there ice present (document if blue ice is used)	/			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		/		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		/		
Were all samples received intact ^{(1)?}	/			
Was adequate sample volume provided ^{(1)?}	/			
Are short holding time analytes or samples with HTs due within 48 hours present ^{(1)?}		/		
Is a chain-of-custody (COC) present and filled out completely ^{(1)?}	/			
Does the COC agree with the number and type of sample bottles received ^{(1)?}	/			
Do the sample IDs on the bottle labels match the COC ^{(1)?}	/			
Is the COC properly relinquished by the client with date and time recorded ^{(1)?}	/			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			/	
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)			/	
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) ZHO Date/Time Reviewed 10/23/24

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Mike Dinkel
Project Number: [none]
Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

SEP-B01V@5'
10/23/2024 10:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	---------------------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory
E410725-01 (Soil)

Table 915 metals by EPA 6020B

Arsenic	3.19		0.288	mg/kg	10	B4J2345	10/23/2024	10/24/2024	
Barium	108		9.94	"	"	"	"	"	

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Mike Dinkel
Project Number: [none]
Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

SS-01NV@3'

10/23/2024 10:23:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	---------------------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory
E410725-02 (Soil)

Table 915 metals by EPA 6020B

Arsenic	3.05		0.282	mg/kg	10	B4J2345	10/23/2024	10/24/2024	
Barium	118		9.72	"	"	"	"	"	

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Mike Dinkel
 Project Number: [none]
 Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

SS-01EV@3'

10/23/2024 10:34:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	---------------------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory
E410725-03 (Soil)

Table 915 metals by EPA 6020B

Arsenic	1.70		0.250	mg/kg	10	B4J2345	10/23/2024	10/24/2024	
---------	------	--	-------	-------	----	---------	------------	------------	--

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Mike Dinkel
 Project Number: [none]
 Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

SS-01SV@3'

10/23/2024 10:40:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	---------------------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory
 E410725-04 (Soil)

Table 915 metals by EPA 6020B

Arsenic	2.83		0.265	mg/kg	10	B4J2345	10/23/2024	10/24/2024	
Barium	82.6		9.15	"	"	"	"	"	

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Mike Dinkel
Project Number: [none]
Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

SS-01WV@3'

10/23/2024 10:15:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
---------	--------	---------------------	-----------------	-------	----------	-------	----------	----------	-------

Origins Laboratory
E410725-05 (Soil)

Table 915 metals by EPA 6020B

Arsenic	3.03		0.262	mg/kg	10	B4J2345	10/23/2024	10/24/2024	
Barium	115		9.04	"	"	"	"	"	

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.



Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Mike Dinkel
 Project Number: [none]
 Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

Metals by EPA 6000/7000 Series Methods - Quality Control
Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B4J2345 - EPA 3050B

Blank (B4J2345-BLK1)

Prepared: 10/23/2024 Analyzed: 10/24/2024

Arsenic	ND	0.290	mg/kg							U
Barium	ND	10.0	"							U
Cadmium	ND	0.100	"							U
Copper	ND	10.0	"							U
Lead	ND	1.00	"							U
Nickel	ND	1.00	"							U
Selenium	ND	0.260	"							U
Silver	ND	0.100	"							U
Zinc	ND	37.0	"							U

LCS (B4J2345-BS1)

Prepared: 10/23/2024 Analyzed: 10/24/2024

Arsenic	4.68	0.290	mg/kg	5.00		93.7	80-120			
Barium	521	10.0	"	500		104	80-120			
Cadmium	5.26	0.100	"	5.00		105	80-120			
Copper	51.0	10.0	"	50.0		102	80-120			
Lead	5.27	1.00	"	5.00		105	80-120			
Nickel	4.87	1.00	"	5.00		97.4	80-120			
Selenium	5.59	0.260	"	5.00		112	80-120			
Silver	5.71	0.100	"	5.00		114	80-120			
Zinc	46.8	37.0	"	50.0		93.6	80-120			

Matrix Spike (B4J2345-MS1)

Source: E410725-01

Prepared: 10/23/2024 Analyzed: 10/24/2024

Arsenic	7.55	0.287	mg/kg	4.95	3.19	88.1	75-125			
Barium	661	9.90	"	495	108	112	75-125			
Cadmium	5.46	0.0990	"	4.95	0.108	108	75-125			
Copper	59.1	9.90	"	49.5	7.83	104	75-125			
Lead	13.1	0.990	"	4.95	8.03	102	75-125			

Origins Laboratory

Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
 2252 Emerson St.
 Denver CO 80205

Mike Dinkel
 Project Number: [none]
 Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

Metals by EPA 6000/7000 Series Methods - Quality Control
Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B4J2345 - EPA 3050B

Matrix Spike (B4J2345-MS1)

Source: E410725-01

Prepared: 10/23/2024 Analyzed: 10/24/2024

Nickel	12.8	0.990	mg/kg	4.95	8.10	95.4	75-125			
Selenium	5.51	0.257	"	4.95	0.125	109	75-125			
Silver	5.75	0.0990	"	4.95	0.0378	115	75-125			
Zinc	77.3	36.6	"	49.5	31.9	91.8	75-125			

Matrix Spike Dup (B4J2345-MSD1)

Source: E410725-01

Prepared: 10/23/2024 Analyzed: 10/24/2024

Arsenic	7.02	0.288	mg/kg	4.97	3.19	77.1	75-125	7.22	20	
Barium	616	9.94	"	497	108	102	75-125	7.08	20	
Cadmium	5.18	0.0994	"	4.97	0.108	102	75-125	5.31	20	
Copper	55.2	9.94	"	49.7	7.83	95.2	75-125	6.93	20	
Lead	12.3	0.994	"	4.97	8.03	85.9	75-125	6.23	20	
Nickel	11.9	0.994	"	4.97	8.10	76.3	75-125	7.49	20	
Selenium	5.16	0.258	"	4.97	0.125	101	75-125	6.56	20	
Silver	5.54	0.0994	"	4.97	0.0378	111	75-125	3.73	20	
Zinc	71.8	36.8	"	49.7	31.9	80.2	75-125	7.46	20	

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Mike Dinkel
Project Number: [none]
Project: KMG - Goodin 15N 15N 16N 16N-B6HZ

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 on a wet weight basis.

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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.