



Absaroka  
Max Dahlgren  
112 High St.

November 06, 2024

Buffalo WY 82834

**Project Name - KMG - Mulga 29C Small Eyed 14C HZ OSA**    **Project Number - [none]**

Attached are your analytical results for KMG - Mulga 29C Small Eyed 14C HZ OSA received by Origins Laboratory October 08, 2024. This project is associated with Origins project number E410238-01.

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

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Buffalo

WY 82834

Max Dahlgren  
Project Number: [none]  
Project: KMG - Mulga 29C Small Eyed 14C HZ  
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## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WP01@3"	E410238-01	Soil	October 8, 2024 9:10	10/08/2024 12:56
BG01@3"	E410238-02	Soil	October 8, 2024 9:00	10/08/2024 12:56
BG02@3"	E410238-03	Soil	October 8, 2024 9:05	10/08/2024 12:56
BG03@3"	E410238-04	Soil	October 8, 2024 9:20	10/08/2024 12:56
BG04@3"	E410238-05	Soil	October 8, 2024 9:23	10/08/2024 12:56

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# ORIGINS LABORATORY

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Project Number: [none]  
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F-012207-01-R1  
Effective Date: 01/09/12

## Sample Receipt Checklist

Origins Work Order: E410238

Client: Absaroka

Client Project ID: Mulga

Checklist Completed by: EHJ

Shipped Via: HO

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

Date/time completed: 10/8/12

Airbill #: N/A

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

Cooler Number/Temperature: 1 / 12.8 °C / °C / °C / °C (Describe)

Thermometer ID: 1004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		/		SO
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 <sup>(1)</sup> ?	/			
Was adequate sample volume provided <sup>(1)</sup> ?	/			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		/		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	/			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	/			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	/			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	/			
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 <sup>(1)</sup> ? (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 <sub>3</sub> , HCl, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			/	
Additional Comments (if any):				

<sup>(1)</sup>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) EHJ

Date/Time Reviewed 10/8/12

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*J. Bynon*

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Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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WP01@3"

10/8/2024 9:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-01 (Soil)

### Boron (DTPA Sorbitol)

Boron	6.45	0.0982	mg/L	1	B4J0915	10/09/2024	10/10/2024
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### DRO/ORO by EPA 8015D

Diesel (C10-C28)	18200	250	mg/kg	10	B4J0801	10/08/2024	10/09/2024
Residual Range Organics (C28-C40)	4510	1000	"	"	"	"	"

Surrogate: o-Terphenyl	152 %	50-150	"	"	"	S-06, Ua
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### GBTEX+TMBs by 8260D

1,2,4-Trimethylbenzene	49.1	0.500	mg/kg	250	B4J0835	10/08/2024	10/09/2024
1,3,5-Trimethylbenzene	28.0	0.500	"	"	"	"	"
Benzene	5.09	0.0500	"	25	"	"	10/09/2024
Ethylbenzene	5.36	0.0500	"	"	"	"	"
Toluene	29.7	0.500	"	250	"	"	10/09/2024
Xylenes, total	86.0	0.500	"	"	"	"	"
Gasoline Range Hydrocarbons	7620	50.0	"	"	"	"	"

Surrogate: 1,2-Dichloroethane-d4	124 %	70-130	"	"	"	"
Surrogate: Toluene-d8	95.9 %	70-130	"	"	"	"
Surrogate: 4-Bromofluorobenzene	134 %	70-130	"	"	"	S-GC

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WP01@3"

10/8/2024 9:10:00AM

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## Origins Laboratory

E410238-01 (Soil)

### Metals by Saturated Paste by EPA 6010

Calcium	21.0	0.499	meq/L	10	[CALC]	10/09/2024	10/10/2024
Magnesium	6.97	0.823	"	"	"	"	"
Sodium	139	4.35	"	100	"	"	10/11/2024

### PAH by EPA 8270E extracted via 3580A

1-Methylnaphthalene	15.6	0.200	mg/kg	100	B4J0839	10/08/2024	10/09/2024
2-Methylnaphthalene	31.4	0.200	"	"	"	"	"
Acenaphthene	ND	0.200	"	10	"	"	10/08/2024 R-05, Ua
Anthracene	ND	0.200	"	"	"	"	" R-05, Ua
Benzo (a) anthracene	0.070	0.050	"	"	"	"	"
Benzo (a) pyrene	ND	0.200	"	"	"	"	" R-05, Ua
Benzo (b) fluoranthene	ND	0.200	"	"	"	"	" R-05, Ua
Benzo (k) fluoranthene	ND	0.200	"	"	"	"	" R-05, Ua
Chrysene	0.457	0.200	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.200	"	"	"	"	" R-05, Ua
Fluoranthene	ND	0.200	"	"	"	"	" R-05, Ua
Fluorene	3.13	0.200	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.200	"	"	"	"	" R-05, Ua
Naphthalene	4.44	0.020	"	"	"	"	"
Pyrene	0.212	0.200	"	"	"	"	"
Surrogate: Fluorene-d10	96.0 %	60-130			"	"	"
Surrogate: Anthracene-d10	94.9 %	60-130			"	"	"

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10/8/2024 9:10:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

### E410238-01 (Soil)

### PAH by EPA 8270E extracted via 3580A

Surrogate: Pyrene-d10	78.4 %	60-130	B4J0839	10/08/2024	10/08/2024
Surrogate: Benzo (a) pyrene-d12	99.2 %	60-130	"	"	"

### pH in Soil by 9045D

pH	7.02	pH Units	1	B4J0925	10/09/2024	10/10/2024
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### SAR by 20B Saturated Paste

SAR	37.3	0.0100	SAR	1	B4J0908	10/09/2024	10/10/2024
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	15.8	0.00500	mmhos/cm	1	B4J0925	10/09/2024	10/10/2024
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### Table 915 metals by EPA 6020B

Arsenic	10.6	0.273	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Barium	172	9.42	"	"	"	"	"
Cadmium	0.280	0.0942	"	"	"	"	"
Copper	9.96	9.42	"	"	"	"	"
Lead	12.8	0.942	"	"	"	"	"
Nickel	10.3	0.942	"	"	"	"	"
Selenium	ND	0.245	"	"	"	"	"
Silver	ND	0.0942	"	"	"	"	"

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WP01@3"

10/8/2024 9:10:00AM

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Origins Laboratory

E410238-01 (Soil)

### Table 915 metals by EPA 6020B

Zinc	ND		34.8	mg/kg	10	B4J0840	10/08/2024	10/09/2024	
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### Total Metals 7196A

Hexavalent Chromium	ND	0.117	0.292	mg/kg dry	1	2689017	10/25/2024	10/30/2024	U
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Jordan A. Bynon, Project Manager



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BG01@3"

10/8/2024 9:00:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

### E410238-02 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.361	0.0984	mg/L	1	B4J0915	10/09/2024	10/10/2024
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### Metals by Saturated Paste by EPA 6010

Calcium	1.41	0.499	meq/L	10	[CALC]	10/09/2024	10/10/2024
Magnesium	ND	0.823	"	"	"	"	"
Sodium	ND	0.435	"	"	"	"	"

### pH in Soil by 9045D

pH	8.03	pH Units	1	B4J0925	10/09/2024	10/10/2024
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### SAR by 20B Saturated Paste

SAR	0.312	0.0100	SAR	1	B4J0908	10/09/2024	10/10/2024
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.268	0.00500	mmhos/cm	1	B4J0925	10/09/2024	10/10/2024
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### Table 915 metals by EPA 6020B

Arsenic	4.11	0.251	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Barium	209	8.66	"	"	"	"	"
Cadmium	0.149	0.0866	"	"	"	"	"
Copper	10.1	8.66	"	"	"	"	"

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BG01@3"

10/8/2024 9:00:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-02 (Soil)

### Table 915 metals by EPA 6020B

Lead	8.24	0.866	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Nickel	9.42	0.866	"	"	"	"	"
Selenium	ND	0.225	"	"	"	"	"
Silver	ND	0.0866	"	"	"	"	"
Zinc	38.7	32.0	"	"	"	"	"

### Total Metals 7196A

Hexavalent Chromium	ND	0.135	0.338	mg/kg dry	1	2689017	10/25/2024	10/30/2024	U
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BG02@3"

10/8/2024 9:05:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory E410238-03 (Soil)

### Boron (DTPA Sorbitol)

Boron	ND	0.101	mg/L	1	B4J0915	10/09/2024	10/10/2024
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### Metals by Saturated Paste by EPA 6010

Calcium	1.81	0.499	meq/L	10	[CALC]	10/09/2024	10/10/2024
Magnesium	ND	0.823	"	"	"	"	"
Sodium	ND	0.435	"	"	"	"	"

### pH in Soil by 9045D

pH	7.76		pH Units	1	B4J0925	10/09/2024	10/10/2024
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### SAR by 20B Saturated Paste

SAR	0.111	0.0100	SAR	1	B4J0908	10/09/2024	10/10/2024
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.332	0.00500	mmhos/cm	1	B4J0925	10/09/2024	10/10/2024
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### Table 915 metals by EPA 6020B

Arsenic	3.42	0.269	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Barium	502	9.28	"	"	"	"	"
Cadmium	0.0993	0.0928	"	"	"	"	"

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BG02@3"

10/8/2024 9:05:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-03 (Soil)

### Table 915 metals by EPA 6020B

Copper	ND	9.28	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Lead	6.46	0.928	"	"	"	"	"
Nickel	9.13	0.928	"	"	"	"	"
Selenium	ND	0.241	"	"	"	"	"
Silver	ND	0.0928	"	"	"	"	"
Zinc	ND	34.3	"	"	"	"	"

### Total Metals 7196A

Hexavalent Chromium	ND	0.137	0.343	mg/kg dry	1	2689017	10/25/2024	10/30/2024	U
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BG03@3"

10/8/2024 9:20:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-04 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.194	0.101	mg/L	1	B4J0915	10/09/2024	10/10/2024
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### Metals by Saturated Paste by EPA 6010

Calcium	1.59	0.499	meq/L	10	[CALC]	10/09/2024	10/10/2024
Magnesium	ND	0.823	"	"	"	"	"
Sodium	ND	0.435	"	"	"	"	"

### pH in Soil by 9045D

pH	8.06	pH Units	1	B4J0925	10/09/2024	10/10/2024
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### SAR by 20B Saturated Paste

SAR	0.0813	0.0100	SAR	1	B4J0908	10/09/2024	10/10/2024
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.265	0.00500	mmhos/cm	1	B4J0925	10/09/2024	10/10/2024
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### Table 915 metals by EPA 6020B

Arsenic	5.58	0.244	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Barium	130	8.43	"	"	"	"	"
Cadmium	0.150	0.0843	"	"	"	"	"
Copper	8.94	8.43	"	"	"	"	"

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BG03@3"

10/8/2024 9:20:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-04 (Soil)

### Table 915 metals by EPA 6020B

Lead	8.19	0.843	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Nickel	9.12	0.843	"	"	"	"	"
Selenium	0.269	0.219	"	"	"	"	"
Silver	ND	0.0843	"	"	"	"	"
Zinc	ND	31.2	"	"	"	"	"

### Total Metals 7196A

Hexavalent Chromium	ND	0.122	0.306	mg/kg dry	1	2689017	10/25/2024	10/30/2024	U
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BG04@3"

10/8/2024 9:23:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-05 (Soil)

### Boron (DTPA Sorbitol)

Boron	0.178	0.0999	mg/L	1	B4J0915	10/09/2024	10/10/2024
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### Metals by Saturated Paste by EPA 6010

Calcium	2.29	0.499	meq/L	10	[CALC]	10/09/2024	10/10/2024
Magnesium	ND	0.823	"	"	"	"	"
Sodium	ND	0.435	"	"	"	"	"

### pH in Soil by 9045D

pH	7.76		pH Units	1	B4J0925	10/09/2024	10/10/2024
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### SAR by 20B Saturated Paste

SAR	0.128	0.0100	SAR	1	B4J0908	10/09/2024	10/10/2024
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### Specific Conductance Mod. 9050A

Specific Conductance (EC)	0.410	0.00500	mmhos/cm	1	B4J0925	10/09/2024	10/10/2024
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### Table 915 metals by EPA 6020B

Arsenic	2.54	0.280	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Barium	88.7	9.66	"	"	"	"	"
Cadmium	ND	0.0966	"	"	"	"	"

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Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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BG04@3"

10/8/2024 9:23:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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## Origins Laboratory

E410238-05 (Soil)

### Table 915 metals by EPA 6020B

Copper	ND	9.66	mg/kg	10	B4J0840	10/08/2024	10/09/2024
Lead	5.01	0.966	"	"	"	"	"
Nickel	6.48	0.966	"	"	"	"	"
Selenium	ND	0.251	"	"	"	"	"
Silver	ND	0.0966	"	"	"	"	"
Zinc	ND	35.7	"	"	"	"	"

### Total Metals 7196A

Hexavalent Chromium	ND	0.137	0.343	mg/kg dry	1	2689017	10/25/2024	10/30/2024	U
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Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B4J0801 - EPA 3550B</b>										
<b>Blank (B4J0801-BLK1)</b>					Prepared: 10/08/2024 Analyzed: 10/08/2024					
Diesel (C10-C28)	ND	25.0	mg/kg							Ua
Residual Range Organics (C28-C40)	ND	100	"							Ua
Surrogate: o-Terphenyl	21		"	24.9		82.6	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0801 - EPA 3550B**

**LCS (B4J0801-BS1)**

Prepared: 10/08/2024 Analyzed: 10/08/2024

Diesel (C10-C28)	1110	50.0	mg/kg	1000		111	70-130			
Residual Range Organics (C28-C40)	1100	200	"	1000		110	70-130			
Surrogate: o-Terphenyl	54		"	49.8		109	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0801 - EPA 3550B**

Matrix Spike (B4J0801-MS1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
Diesel (C10-C28)	1190	50.0	mg/kg	1000	ND	119	70-130			
Residual Range Organics (C28-C40)	1230	200	"	1000	ND	123	70-130			
Surrogate: o-Terphenyl	59		"	49.8		118	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0801 - EPA 3550B**

Matrix Spike Dup (B4J0801-MSD1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
Diesel (C10-C28)	1140	50.0	mg/kg	1000	ND	114	70-130	4.75	35	
Residual Range Organics (C28-C40)	1150	200	"	1000	ND	115	70-130	6.98	35	
Surrogate: o-Terphenyl	55		"	49.8		110	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B4J0835 - EPA 5030 (soil)</b>										
<b>Blank (B4J0835-BLK1)</b>					Prepared: 10/08/2024 Analyzed: 10/08/2024					
1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							Ua
1,3,5-Trimethylbenzene	ND	0.00200	"							Ua
Benzene	ND	0.00200	"							Ua
Ethylbenzene	ND	0.00200	"							Ua
Naphthalene	ND	0.00380	"							Ua
Toluene	ND	0.00200	"							Ua
Xylenes, total	ND	0.00200	"							Ua
Gasoline Range Hydrocarbons	ND	0.200	"							Ua
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		103	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		104	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0835 - EPA 5030 (soil)**

**LCS (B4J0835-BS1)**

Prepared: 10/08/2024 Analyzed: 10/08/2024

1,2,4-Trimethylbenzene	0.107	0.00200	mg/kg	0.100		107	70-130			
1,3,5-Trimethylbenzene	0.107	0.00200	"	0.100		107	70-130			
Benzene	0.0929	0.00200	"	0.100		92.9	70-130			
Ethylbenzene	0.105	0.00200	"	0.100		105	70-130			
Naphthalene	0.0984	0.00380	"	0.100		98.4	70-130			
Toluene	0.0962	0.00200	"	0.100		96.2	70-130			
o-Xylene	0.107	0.00200	"	0.100		107	70-130			
m,p-Xylene	0.221	0.00400	"	0.200		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		106	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		104	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		105	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0835 - EPA 5030 (soil)**

Matrix Spike (B4J0835-MS1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
1,2,4-Trimethylbenzene	0.0993	0.00200	mg/kg	0.100	ND	99.3	70-130			
1,3,5-Trimethylbenzene	0.0985	0.00200	"	0.100	ND	98.5	70-130			
Benzene	0.0895	0.00200	"	0.100	ND	89.5	70-130			
Ethylbenzene	0.0956	0.00200	"	0.100	ND	95.6	70-130			
Naphthalene	0.0989	0.00380	"	0.100	ND	98.9	70-130			
Toluene	0.0903	0.00200	"	0.100	ND	90.3	70-130			
o-Xylene	0.0981	0.00200	"	0.100	ND	98.1	70-130			
m,p-Xylene	0.203	0.00400	"	0.200	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		105	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		103	70-130			

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## Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control

### Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B4J0835 - EPA 5030 (soil)

Matrix Spike Dup (B4J0835-MSD1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
1,2,4-Trimethylbenzene	0.0884	0.00200	mg/kg	0.100	ND	88.4	70-130	11.7	20	
1,3,5-Trimethylbenzene	0.0885	0.00200	"	0.100	ND	88.5	70-130	10.7	20	
Benzene	0.0811	0.00200	"	0.100	ND	81.1	70-130	9.87	20	
Ethylbenzene	0.0858	0.00200	"	0.100	ND	85.8	70-130	10.7	20	
Naphthalene	0.0890	0.00380	"	0.100	ND	89.0	70-130	10.5	20	
Toluene	0.0815	0.00200	"	0.100	ND	81.5	70-130	10.2	20	
o-Xylene	0.0879	0.00200	"	0.100	ND	87.9	70-130	11.1	20	
m,p-Xylene	0.182	0.00400	"	0.200	ND	91.0	70-130	10.9	20	
Surrogate: 1,2-Dichloroethane-d4	0.14		"	0.125		108	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		101	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**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
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**Batch B4J0840 - EPA 3050B**

**Blank (B4J0840-BLK1)**

Prepared: 10/08/2024 Analyzed: 10/09/2024

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

**LCS (B4J0840-BS1)**

Prepared: 10/08/2024 Analyzed: 10/09/2024

Arsenic	5.64	0.290	mg/kg	5.00	113	80-120
Barium	542	10.0	"	500	108	80-120
Cadmium	5.38	0.100	"	5.00	108	80-120
Copper	59.3	10.0	"	50.0	119	80-120
Lead	5.44	1.00	"	5.00	109	80-120
Nickel	5.94	1.00	"	5.00	119	80-120
Selenium	5.65	0.260	"	5.00	113	80-120
Silver	5.64	0.100	"	5.00	113	80-120
Zinc	58.0	37.0	"	50.0	116	80-120

**Matrix Spike (B4J0840-MS1)**

**Source: E410238-05**

Prepared: 10/08/2024 Analyzed: 10/09/2024

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**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
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**Batch B4J0840 - EPA 3050B**

Matrix Spike (B4J0840-MS1)		Source: E410238-05			Prepared: 10/08/2024 Analyzed: 10/09/2024					
Arsenic	7.15	0.242	mg/kg	4.18	2.54	110	75-125			
Barium	531	8.36	"	418	88.7	106	75-125			
Cadmium	4.70	0.0836	"	4.18	0.0744	111	75-125			
Copper	55.0	8.36	"	41.8	7.83	113	75-125			
Lead	9.63	0.836	"	4.18	5.01	111	75-125			
Nickel	11.1	0.836	"	4.18	6.48	110	75-125			
Selenium	4.82	0.217	"	4.18	0.0918	113	75-125			
Silver	4.86	0.0836	"	4.18	0.0242	116	75-125			
Zinc	74.5	30.9	"	41.8	30.8	105	75-125			
Matrix Spike Dup (B4J0840-MSD1)		Source: E410238-05			Prepared: 10/08/2024 Analyzed: 10/09/2024					
Arsenic	7.84	0.257	mg/kg	4.43	2.54	120	75-125	9.27	20	
Barium	587	8.86	"	443	88.7	113	75-125	9.94	20	
Cadmium	5.19	0.0886	"	4.43	0.0744	115	75-125	9.83	20	
Copper	59.8	8.86	"	44.3	7.83	117	75-125	8.34	20	
Lead	10.2	0.886	"	4.43	5.01	117	75-125	5.47	20	
Nickel	12.0	0.886	"	4.43	6.48	124	75-125	7.55	20	
Selenium	4.89	0.230	"	4.43	0.0918	108	75-125	1.46	20	
Silver	5.31	0.0886	"	4.43	0.0242	119	75-125	9.03	20	
Zinc	83.4	32.8	"	44.3	30.8	119	75-125	11.3	20	

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## EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control

### Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B4J0839 - EPA 3580

#### Blank (B4J0839-BLK1)

Prepared: 10/08/2024 Analyzed: 10/08/2024

1-Methylnaphthalene	ND	0.002	mg/kg							Ua
2-Methylnaphthalene	ND	0.002	"							Ua
Acenaphthene	ND	0.020	"							Ua
Anthracene	ND	0.020	"							Ua
Benzo (a) anthracene	ND	0.005	"							Ua
Benzo (a) pyrene	ND	0.020	"							Ua
Benzo (b) fluoranthene	ND	0.020	"							Ua
Benzo (g,h,i) perylene	ND	0.020	"							Ua
Benzo (k) fluoranthene	ND	0.020	"							Ua
Chrysene	ND	0.020	"							Ua
Dibenz (a,h) anthracene	ND	0.020	"							Ua
Fluoranthene	ND	0.020	"							Ua
Fluorene	ND	0.020	"							Ua
Indeno (1,2,3-cd) pyrene	ND	0.020	"							Ua
Naphthalene	ND	0.002	"							Ua
Phenanthrene	ND	0.020	"							Ua
Pyrene	ND	0.020	"							Ua
Surrogate: Fluorene-d10	200		ug/kg	200		100	60-130			
Surrogate: Anthracene-d10	180		"	200		89.7	60-130			
Surrogate: Pyrene-d10	200		"	200		102	60-130			
Surrogate: Benzo (a) pyrene-d12	210		"	200		103	60-130			

#### LCS (B4J0839-BS1)

Prepared: 10/08/2024 Analyzed: 10/08/2024

1-Methylnaphthalene	0.190	0.002	mg/kg	0.200		94.9	70-130			
2-Methylnaphthalene	0.189	0.002	"	0.200		94.5	70-130			
Acenaphthene	0.193	0.020	"	0.200		96.3	70-130			
Anthracene	0.178	0.020	"	0.200		88.8	70-130			

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Project Number: [none]  
Project: KMG - Mulga 29C Small Eyed 14C HZ  
OSA

## EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control

### Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B4J0839 - EPA 3580

#### LCS (B4J0839-BS1)

Prepared: 10/08/2024 Analyzed: 10/08/2024

Benzo (a) anthracene	0.181	0.005	mg/kg	0.200		90.4	70-130
Benzo (a) pyrene	0.190	0.020	"	0.200		95.1	70-130
Benzo (b) fluoranthene	0.204	0.020	"	0.200		102	70-130
Benzo (g,h,i) perylene	0.195	0.020	"	0.200		97.3	70-130
Benzo (k) fluoranthene	0.191	0.020	"	0.200		95.7	70-130
Chrysene	0.184	0.020	"	0.200		92.2	70-130
Dibenz (a,h) anthracene	0.194	0.020	"	0.200		97.2	70-130
Fluoranthene	0.169	0.020	"	0.200		84.6	70-130
Fluorene	0.194	0.020	"	0.200		96.8	70-130
Indeno (1,2,3-cd) pyrene	0.232	0.020	"	0.200		116	70-130
Naphthalene	0.198	0.002	"	0.200		98.8	70-130
Phenanthrene	0.176	0.020	"	0.200		88.0	70-130
Pyrene	0.198	0.020	"	0.200		99.1	70-130
Surrogate: Fluorene-d10	200		ug/kg	200		98.7	60-130
Surrogate: Anthracene-d10	180		"	200		89.5	60-130
Surrogate: Pyrene-d10	210		"	200		106	60-130
Surrogate: Benzo (a) pyrene-d12	210		"	200		104	60-130

#### Matrix Spike (B4J0839-MS1)

Source: E410224-01

Prepared: 10/08/2024 Analyzed: 10/08/2024

1-Methylnaphthalene	0.216	0.002	mg/kg	0.200	ND	108	70-130
2-Methylnaphthalene	0.211	0.002	"	0.200	ND	106	70-130
Acenaphthene	0.214	0.020	"	0.200	ND	107	70-130
Anthracene	0.199	0.020	"	0.200	ND	99.3	70-130
Benzo (a) anthracene	0.207	0.005	"	0.200	0.0004	103	70-130
Benzo (a) pyrene	0.216	0.020	"	0.200	ND	108	70-130
Benzo (b) fluoranthene	0.226	0.020	"	0.200	0.0008	113	70-130
Benzo (g,h,i) perylene	0.212	0.020	"	0.200	0.001	105	70-130

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Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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## EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control

### Origins Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B4J0839 - EPA 3580

Matrix Spike (B4J0839-MS1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
Benzo (k) fluoranthene	0.211	0.020	mg/kg	0.200	0.001	105	70-130			
Chrysene	0.194	0.020	"	0.200	0.0008	96.7	70-130			
Dibenz (a,h) anthracene	0.209	0.020	"	0.200	0.002	104	70-130			
Fluoranthene	0.190	0.020	"	0.200	ND	95.1	70-130			
Fluorene	0.217	0.020	"	0.200	ND	109	70-130			
Indeno (1,2,3-cd) pyrene	0.206	0.020	"	0.200	0.002	102	70-130			
Naphthalene	0.218	0.002	"	0.200	ND	109	70-130			
Phenanthrene	0.194	0.020	"	0.200	ND	96.8	70-130			
Pyrene	0.211	0.020	"	0.200	ND	105	70-130			
Surrogate: Fluorene-d10	200		ug/kg	200		100	60-130			
Surrogate: Anthracene-d10	180		"	200		90.5	60-130			
Surrogate: Pyrene-d10	200		"	200		102	60-130			
Surrogate: Benzo (a) pyrene-d12	210		"	200		105	60-130			

Matrix Spike Dup (B4J0839-MSD1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
1-Methylnaphthalene	0.205	0.002	mg/kg	0.200	ND	102	70-130	5.60	20	
2-Methylnaphthalene	0.201	0.002	"	0.200	ND	101	70-130	4.72	20	
Acenaphthene	0.205	0.020	"	0.200	ND	102	70-130	4.39	20	
Anthracene	0.185	0.020	"	0.200	ND	92.7	70-130	6.88	20	
Benzo (a) anthracene	0.185	0.005	"	0.200	0.0004	92.1	70-130	11.3	20	
Benzo (a) pyrene	0.201	0.020	"	0.200	ND	101	70-130	7.12	20	
Benzo (b) fluoranthene	0.202	0.020	"	0.200	0.0008	101	70-130	11.2	20	
Benzo (g,h,i) perylene	0.207	0.020	"	0.200	0.001	103	70-130	2.38	20	
Benzo (k) fluoranthene	0.203	0.020	"	0.200	0.001	101	70-130	3.89	20	
Chrysene	0.176	0.020	"	0.200	0.0008	87.8	70-130	9.59	20	
Dibenz (a,h) anthracene	0.199	0.020	"	0.200	0.002	98.5	70-130	4.89	20	
Fluoranthene	0.191	0.020	"	0.200	ND	95.4	70-130	0.342	20	

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Max Dahlgren

Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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**EPA 8270E (SW846) - Semivolatile Organic Compounds - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0839 - EPA 3580**

Matrix Spike Dup (B4J0839-MSD1)		Source: E410224-01			Prepared: 10/08/2024 Analyzed: 10/08/2024					
Fluorene	0.209	0.020	mg/kg	0.200	ND	104	70-130	3.92	20	
Indeno (1,2,3-cd) pyrene	0.201	0.020	"	0.200	0.002	99.2	70-130	2.38	20	
Naphthalene	0.208	0.002	"	0.200	ND	104	70-130	4.61	20	
Phenanthrene	0.184	0.020	"	0.200	ND	92.1	70-130	4.97	20	
Pyrene	0.201	0.020	"	0.200	ND	101	70-130	4.58	20	
Surrogate: Fluorene-d10	200		ug/kg	200		99.6	60-130			
Surrogate: Anthracene-d10	180		"	200		90.8	60-130			
Surrogate: Pyrene-d10	200		"	200		102	60-130			
Surrogate: Benzo (a) pyrene-d12	200		"	200		100	60-130			

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Jordan A. Bynon, Project Manager



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**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0908 - Saturated Paste Metals**

**Blank (B4J0908-BLK1)**

Prepared: 10/09/2024 Analyzed: 10/10/2024

Calcium PPM	ND	10.0	mg/L
SAR	ND	0.0100	SAR
Magnesium PPM	ND	10.0	mg/L
Sodium PPM	ND	10.0	"

**Duplicate (B4J0908-DUP1)**

**Source: E410224-12**

Prepared: 10/09/2024 Analyzed: 10/10/2024

Calcium PPM	21.3	10.0	mg/L	22.3	4.58	50
SAR	ND	0.0100	SAR	10.2		200
Magnesium PPM	27.5	10.0	mg/L	28.4	2.97	50
Sodium PPM	309	10.0	"	309	0.00972	50

**Batch B4J0915 - DTPA Sorbitol Preparation**

**Blank (B4J0915-BLK1)**

Prepared: 10/09/2024 Analyzed: 10/10/2024

Boron	ND	0.100	mg/L
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**Duplicate (B4J0915-DUP1)**

**Source: E410224-12**

Prepared: 10/09/2024 Analyzed: 10/10/2024

Boron	1.38	0.101	mg/L	1.42	3.16	50
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Jordan A. Bynon, Project Manager



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**Saturated Paste - Quality Control**  
**Origins Laboratory**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B4J0925 - Saturated Paste pH/EC**

**Blank (B4J0925-BLK1)**

Prepared: 10/09/2024 Analyzed: 10/10/2024

Specific Conductance (EC) ND 0.00500 mmhos/cm

**Duplicate (B4J0925-DUP1)**

**Source: E410224-12**

Prepared: 10/09/2024 Analyzed: 10/10/2024

pH	7.97		pH Units	7.98			0.125	25	
Specific Conductance (EC)	1.70	0.00500	mmhos/cm	1.72			0.969	25	

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Jordan A. Bynon, Project Manager

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Project Number: [none]  
Project: KMG - Mulga 29C Small Eyed 14C HZ  
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## Total Metals 7196A - Quality Control GEL Laboratories, LLC

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2689017 - SW846 3060A</b>										
<b>BLANK (1205888675-BLK)</b>					Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	ND	0.315	mg/kg				-			U
<b>LCS (1205888676-BKS)</b>					Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	3.33	0.331	mg/kg	3.31		101	80-120			
<b>DUP (1205888677 D)</b>					Source: 689449001 Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	ND	0.430	mg/kg dry		<0.172		0-50	N/A	50	U
<b>MS (1205888678 S)</b>					Source: 689449001 Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	2.91	0.377	mg/kg dry	3.77	<0.151	77.1	75-125			
<b>DUP (1205888679 D)</b>					Source: 689449002 Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	ND	0.314	mg/kg dry		<0.126		0-50	N/A	50	U
<b>MS (1205888680 S)</b>					Source: 689449002 Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	2.79	0.384	mg/kg dry	3.84	<0.153	72.7	75-125			
<b>ILCS (1205888681-ILCS)</b>					Prepared: 10/25/2024 Analyzed: 10/30/2024					
Hexavalent Chromium	7.22	0.351	mg/kg	7.08		102	80-120			

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Project Number: [none]

Project: KMG - Mulga 29C Small Eyed 14C HZ  
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## Notes and Definitions

Ua Sample is Non-Detect.

U Result not detected above the detection limit

S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.

R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

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