



Quandary Consultants

Patrick Lawler

2252 Emerson St.

Denver

CO

80205

December 11, 2024

Project Name - Bison - Shull Spill

Project Number - [none]

Attached are your analytical results for Bison - Shull Spill received by Origins Laboratory November 06, 2024. This project is associated with Origins project number E4K0190-01.

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

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

CROSS REFERENCE REPORT

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|-----------|---------------|--------|------------------------|------------------|
| B-01 | E4K0190-01 | Soil | November 5, 2024 1:25 | 11/06/2024 10:38 |
| BG01 | E4K0190-02 | Soil | November 5, 2024 12:05 | 11/06/2024 10:38 |
| BG02 | E4K0190-03 | Soil | November 5, 2024 12:15 | 11/06/2024 10:38 |
| BG03 | E4K0190-04 | Soil | November 5, 2024 12:25 | 11/06/2024 10:38 |
| BG04 | E4K0190-05 | Soil | November 5, 2024 12:30 | 11/06/2024 10:38 |
| BG05 | E4K0190-06 | Soil | November 5, 2024 12:35 | 11/06/2024 10:38 |

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

ORIGINS
LABORATORY

64K0190

Page 7 of 7

Client: Quandary Consultants
Address: 2252 Emerson St.
City: Denver, CO
Project Manager: Patrick Lawler
Project Name: Bison
Project Number: Shull Spill
Collected By: PM
Invoice Billing Info: Sampled by Quandary Consultants
Email Address: sampled@quandary.com
Telephone Number: 720-471-1444
Key: ☐ W=Water ☐ GW=Groundwater ☐ SW=Surface Water ☐ WW=Waste Water ☐ L=Liquid

S=Soil | SO=Solid | O=Oil | A=Air | G=Gas | URP=Uropres | HCL=Hydrochloric | HNO3=Nitric | H2SO4=Sulfuric | NaOH=Sodium Hydroxide

| Sample ID | Date Sampled | Time Sampled | # of Containers | Matrix Preservative | Analysis | | | | | | | | | | | | Comments | |
|-----------|--------------|--------------|-----------------|---------------------|----------|---|---|---|---|---|---|---|---|----|----|----|----------|--|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| B-D1 | 11/5/24 | 1200 | 3 | NA | | | | | | | | | | | | | | |
| B601 | 11/5/24 | 1205 | 2 | | | | | | | | | | | | | | | |
| B602 | 11/5/24 | 1205 | 1 | | | | | | | | | | | | | | | |
| B603 | 11/5/24 | 1205 | 1 | | | | | | | | | | | | | | | |
| B604 | 11/5/24 | 1230 | 1 | | | | | | | | | | | | | | | |
| B605 | 11/5/24 | 1235 | 1 | | | | | | | | | | | | | | | |
| B606 PM | 11/5/24 | | | | | | | | | | | | | | | | | |

Relinquished By: Patrick Date: 11/5/24 Time: 1702 Received By: Unit 4 Bridge Date: 11/5/24 Time: 1702
Relinquished By: Unit 4 Bridge Date: 11/6/24 Time: 1015 Received By: Patrick Date: 11/6/24 Time: 1015
Temp Received: 5 Received On Ice: Yes

Turnaround Time: ☐ SAME DAY ☐ 24 Hr ☒ 48 Hr ☐ 72

Standard ☒ Yes ☐ No

Origins Laboratory

Jefe Pellegrini

Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

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

Sample Receipt Checklist

Origins Work Order: E4K0190 Client: Quandary
Client Project ID: Bison

Checklist Completed by: JHO WS Shipped Via: HD
Date/time completed: 11/16/14 (UPS, FedEx, Hand Delivered, Pick-up, etc.)
Airbill #: N/A

Matrix(s) Received: (Check all that apply): Y Soil/Solid Water Other: _____
Cooler Number/Temperature: 1 3.1 °C / _____ °C / _____ °C (Describe) _____ °C
Thermometer ID: 1007

| Requirement Description | Yes | No | N/A | Comments (if any) |
|---|-----|----|-----|-------------------|
| If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ? | / | | | |
| 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 HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +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) JHO

11/18/14
Date/Time Reviewed

Origins Laboratory

Jen Pellegrini

Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

B-01

11/5/2024 1:25:00AM

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

Origins Laboratory

E4K0190-01 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | | |
|-------|-------|--------|------|---|---------|------------|------------|--|
| Boron | 0.376 | 0.0984 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 | |
|-------|-------|--------|------|---|---------|------------|------------|--|

DRO/ORO by EPA 8015D

| | | | | | | | | |
|-----------------------------------|----|------|-------|---|---------|------------|------------|----|
| Diesel (C10-C28) | ND | 25.0 | mg/kg | 1 | B4K0801 | 11/08/2024 | 11/08/2024 | Ua |
| Residual Range Organics (C28-C40) | ND | 100 | " | " | " | " | " | Ua |

| | | | | | |
|------------------------|--------|--------|---|---|---|
| Surrogate: o-Terphenyl | 79.2 % | 50-150 | " | " | " |
|------------------------|--------|--------|---|---|---|

GBTEX+TMBs by 8260D

| | | | | | | | | |
|-----------------------------|----|---------|-------|---|---------|------------|------------|----|
| 1,2,4-Trimethylbenzene | ND | 0.00200 | mg/kg | 1 | B4K1001 | 11/10/2024 | 11/10/2024 | Ua |
| 1,3,5-Trimethylbenzene | ND | 0.00200 | " | " | " | " | " | Ua |
| Benzene | ND | 0.00200 | " | " | " | " | " | Ua |
| Ethylbenzene | ND | 0.00200 | " | " | " | " | " | Ua |
| Toluene | ND | 0.00200 | " | " | " | " | " | Ua |
| Xylenes, total | ND | 0.00200 | " | " | " | " | " | Ua |
| Gasoline Range Hydrocarbons | ND | 0.200 | " | " | " | " | " | Ua |

| | | | | | |
|----------------------------------|-------|--------|---|---|---|
| Surrogate: 1,2-Dichloroethane-d4 | 108 % | 70-130 | " | " | " |
|----------------------------------|-------|--------|---|---|---|

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Quandary Consultants

2252 Emerson St.

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Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

B-01

11/5/2024 1:25:00AM

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

Origins Laboratory

E4K0190-01 (Soil)

GBTEX+TMBs by 8260D

| | | | | | |
|---------------------------------|--------|--------|-------------|------------|------------|
| Surrogate: Toluene-d8 | 98.8 % | 70-130 | B4K10 01 | 11/10/2024 | 11/10/2024 |
| Surrogate: 4-Bromofluorobenzene | 97.4 % | 70-130 | " | " | " |

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|------|-------|-------|----|--------|------------|------------|
| Calcium | 5.88 | 0.499 | meq/L | 10 | [CALC] | 11/12/2024 | 11/13/2024 |
| Magnesium | 2.07 | 0.823 | " | " | " | " | " |
| Sodium | 5.93 | 0.435 | " | " | " | " | " |

PAH by 3541/8270

| | | | | | | | | | |
|------------------------|----|---------|---------|-----------|---|---------|------------|------------|----|
| 1-Methylnaphthalene | ND | 0.00114 | 0.00344 | mg/kg dry | 1 | 2708362 | 11/20/2024 | 11/20/2024 | hU |
| 2-Methylnaphthalene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Acenaphthene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Anthracene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Benzo(a)anthracene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Benzo(a)pyrene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Benzo(b)fluoranthene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Benzo(k)fluoranthene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Chrysene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Dibenzo(a,h)anthracene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Fluoranthene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |

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Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

B-01

11/5/2024 1:25:00AM

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

GEL Laboratories, LLC

E4K0190-01 (Soil)

PAH by 3541/8270

| | | | | | | | | | |
|------------------------|----|---------|---------|-----------|---|---------|------------|------------|----|
| Fluorene | ND | 0.00114 | 0.00344 | mg/kg dry | 1 | 2708362 | 11/20/2024 | 11/20/2024 | hU |
| Indeno(1,2,3-cd)pyrene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Naphthalene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |
| Pyrene | ND | 0.00114 | 0.00344 | " | " | " | " | " | hU |

| | | | | | | | | | |
|-------------------------------|------|--|--------|--|--|---|---|---|--|
| Surrogate: 5-alpha-Androstane | 82 % | | 22-135 | | | " | " | " | |
|-------------------------------|------|--|--------|--|--|---|---|---|--|

pH in Soil by 9045D

| | | | | | | | | | |
|----|------|--|--|----------|---|---------|------------|------------|--|
| pH | 8.03 | | | pH Units | 1 | B4K1211 | 11/12/2024 | 11/13/2024 | |
|----|------|--|--|----------|---|---------|------------|------------|--|

SAR by 20B Saturated Paste

| | | | | | | | | | |
|-----|------|--|--------|-----|---|---------|------------|------------|--|
| SAR | 2.97 | | 0.0100 | SAR | 1 | B4K1206 | 11/12/2024 | 11/13/2024 | |
|-----|------|--|--------|-----|---|---------|------------|------------|--|

Specific Conductance Mod. 9050A

| | | | | | | | | | |
|---------------------------|------|--|---------|----------|---|---------|------------|------------|--|
| Specific Conductance (EC) | 1.82 | | 0.00500 | mmhos/cm | 1 | B4K1211 | 11/12/2024 | 11/13/2024 | |
|---------------------------|------|--|---------|----------|---|---------|------------|------------|--|

Table 915 metals by EPA 6020B

| | | | | | | | | | |
|---------|--------|--|--------|-------|----|---------|------------|------------|--|
| Arsenic | 2.01 | | 0.254 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Barium | 83.4 | | 8.77 | " | " | " | " | " | |
| Cadmium | 0.0974 | | 0.0877 | " | " | " | " | " | |

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

B-01

11/5/2024 1:25:00AM

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

Origins Laboratory

E4K0190-01 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | |
|----------|------|--------|-------|----|---------|------------|------------|----|
| Copper | ND | 8.77 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | Ua |
| Lead | 4.25 | 0.877 | " | " | " | " | " | |
| Nickel | 3.94 | 0.877 | " | " | " | " | " | |
| Selenium | ND | 0.228 | " | " | " | " | " | Ua |
| Silver | ND | 0.0877 | " | " | " | " | " | Ua |
| Zinc | ND | 32.5 | " | " | " | " | " | Ua |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | ND | 0.117 | 0.292 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | U |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG01

11/5/2024 12:05:00PM

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

Origins Laboratory

E4K0190-02 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | |
|-------|-------|--------|------|---|---------|------------|------------|
| Boron | 0.699 | 0.0997 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 |
|-------|-------|--------|------|---|---------|------------|------------|

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|------|-------|-------|----|--------|------------|------------|
| Calcium | 6.98 | 0.499 | meq/L | 10 | [CALC] | 11/12/2024 | 11/13/2024 |
| Magnesium | 2.61 | 0.823 | " | " | " | " | " |
| Sodium | 9.06 | 0.435 | " | " | " | " | " |

pH in Soil by 9045D

| | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|
| pH | 7.98 | | pH Units | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|----|------|--|----------|---|---------|------------|------------|

SAR by 20B Saturated Paste

| | | | | | | | |
|-----|------|--------|-----|---|---------|------------|------------|
| SAR | 4.14 | 0.0100 | SAR | 1 | B4K1206 | 11/12/2024 | 11/13/2024 |
|-----|------|--------|-----|---|---------|------------|------------|

Specific Conductance Mod. 9050A

| | | | | | | | |
|---------------------------|------|---------|----------|---|---------|------------|------------|
| Specific Conductance (EC) | 2.39 | 0.00500 | mmhos/cm | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|---------------------------|------|---------|----------|---|---------|------------|------------|

Table 915 metals by EPA 6020B

| | | | | | | | | |
|---------|------|--------|-------|----|---------|------------|------------|----|
| Arsenic | 1.95 | 0.249 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Barium | 82.4 | 8.58 | " | " | " | " | " | |
| Cadmium | ND | 0.0858 | " | " | " | " | " | Ua |
| Copper | ND | 8.58 | " | " | " | " | " | Ua |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG01

11/5/2024 12:05:00PM

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

Origins Laboratory

E4K0190-02 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | | |
|----------|------|--|--------|-------|----|---------|------------|------------|----|
| Lead | 3.58 | | 0.858 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Nickel | 3.92 | | 0.858 | " | " | " | " | " | |
| Selenium | ND | | 0.223 | " | " | " | " | " | Ua |
| Silver | ND | | 0.0858 | " | " | " | " | " | Ua |
| Zinc | ND | | 31.8 | " | " | " | " | " | Ua |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | ND | 0.159 | 0.398 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | U |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

BG02

11/5/2024 12:15:00PM

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

Origins Laboratory E4K0190-03 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | |
|-------|------|-------|------|---|---------|------------|------------|
| Boron | 1.15 | 0.100 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 |
|-------|------|-------|------|---|---------|------------|------------|

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|------|-------|-------|----|--------|------------|------------|
| Calcium | 8.71 | 0.499 | meq/L | 10 | [CALC] | 11/12/2024 | 11/13/2024 |
| Magnesium | 1.10 | 0.823 | " | " | " | " | " |
| Sodium | ND | 0.435 | " | " | " | " | " |

pH in Soil by 9045D

| | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|
| pH | 7.74 | | pH Units | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|----|------|--|----------|---|---------|------------|------------|

SAR by 20B Saturated Paste

| | | | | | | | |
|-----|--------|--------|-----|---|---------|------------|------------|
| SAR | 0.0632 | 0.0100 | SAR | 1 | B4K1206 | 11/12/2024 | 11/13/2024 |
|-----|--------|--------|-----|---|---------|------------|------------|

Specific Conductance Mod. 9050A

| | | | | | | | |
|---------------------------|------|---------|----------|---|---------|------------|------------|
| Specific Conductance (EC) | 1.18 | 0.00500 | mmhos/cm | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|---------------------------|------|---------|----------|---|---------|------------|------------|

Table 915 metals by EPA 6020B

| | | | | | | | |
|---------|-------|--------|-------|----|---------|------------|------------|
| Arsenic | 4.63 | 0.253 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 |
| Barium | 342 | 8.74 | " | " | " | " | " |
| Cadmium | 0.343 | 0.0874 | " | " | " | " | " |
| Copper | 16.3 | 8.74 | " | " | " | " | " |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG02

11/5/2024 12:15:00PM

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

Origins Laboratory

E4K0190-03 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | |
|----------|-------|--------|-------|----|---------|------------|------------|----|
| Lead | 22.6 | 0.874 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Nickel | 12.9 | 0.874 | " | " | " | " | " | |
| Selenium | 0.369 | 0.227 | " | " | " | " | " | |
| Silver | ND | 0.0874 | " | " | " | " | " | Ua |
| Zinc | 72.3 | 32.3 | " | " | " | " | " | |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | ND | 0.123 | 0.307 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | U |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG03

11/5/2024 12:25:00PM

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

Origins Laboratory

E4K0190-04 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | |
|-------|-------|-------|------|---|---------|------------|------------|
| Boron | 0.951 | 0.101 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 |
|-------|-------|-------|------|---|---------|------------|------------|

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|-------|-------|-------|----|--------|------------|------------|
| Calcium | 3.25 | 0.499 | meq/L | 10 | [CALC] | 11/12/2024 | 11/13/2024 |
| Magnesium | ND | 0.823 | " | " | " | " | " |
| Sodium | 0.770 | 0.435 | " | " | " | " | " |

pH in Soil by 9045D

| | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|
| pH | 8.01 | | pH Units | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|----|------|--|----------|---|---------|------------|------------|

SAR by 20B Saturated Paste

| | | | | | | | |
|-----|-------|--------|-----|---|---------|------------|------------|
| SAR | 0.561 | 0.0100 | SAR | 1 | B4K1206 | 11/12/2024 | 11/13/2024 |
|-----|-------|--------|-----|---|---------|------------|------------|

Specific Conductance Mod. 9050A

| | | | | | | | |
|---------------------------|-------|---------|----------|---|---------|------------|------------|
| Specific Conductance (EC) | 0.521 | 0.00500 | mmhos/cm | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|---------------------------|-------|---------|----------|---|---------|------------|------------|

Table 915 metals by EPA 6020B

| | | | | | | | |
|---------|-------|--------|-------|----|---------|------------|------------|
| Arsenic | 4.49 | 0.273 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 |
| Barium | 345 | 9.42 | " | " | " | " | " |
| Cadmium | 0.275 | 0.0942 | " | " | " | " | " |
| Copper | 15.5 | 9.42 | " | " | " | " | " |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG03

11/5/2024 12:25:00PM

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

Origins Laboratory

E4K0190-04 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | |
|----------|-------|--------|-------|----|---------|------------|------------|----|
| Lead | 17.1 | 0.942 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Nickel | 12.2 | 0.942 | " | " | " | " | " | |
| Selenium | 0.292 | 0.245 | " | " | " | " | " | |
| Silver | ND | 0.0942 | " | " | " | " | " | Ua |
| Zinc | 67.8 | 34.9 | " | " | " | " | " | |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | ND | 0.156 | 0.390 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | U |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG04

11/5/2024 12:30:00PM

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

Origins Laboratory

E4K0190-05 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | |
|-------|-------|--------|------|---|---------|------------|------------|
| Boron | 0.883 | 0.0981 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 |
|-------|-------|--------|------|---|---------|------------|------------|

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|------|-------|-------|----|--------|------------|------------|
| Calcium | 7.35 | 0.499 | meq/L | 10 | [CALC] | 11/12/2024 | 11/13/2024 |
| Magnesium | 1.14 | 0.823 | " | " | " | " | " |
| Sodium | ND | 0.435 | " | " | " | " | " |

pH in Soil by 9045D

| | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|
| pH | 7.80 | | pH Units | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|----|------|--|----------|---|---------|------------|------------|

SAR by 20B Saturated Paste

| | | | | | | | |
|-----|-------|--------|-----|---|---------|------------|------------|
| SAR | 0.174 | 0.0100 | SAR | 1 | B4K1206 | 11/12/2024 | 11/13/2024 |
|-----|-------|--------|-----|---|---------|------------|------------|

Specific Conductance Mod. 9050A

| | | | | | | | |
|---------------------------|------|---------|----------|---|---------|------------|------------|
| Specific Conductance (EC) | 1.14 | 0.00500 | mmhos/cm | 1 | B4K1211 | 11/12/2024 | 11/13/2024 |
|---------------------------|------|---------|----------|---|---------|------------|------------|

Table 915 metals by EPA 6020B

| | | | | | | | |
|---------|-------|--------|-------|----|---------|------------|------------|
| Arsenic | 4.37 | 0.271 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 |
| Barium | 299 | 9.35 | " | " | " | " | " |
| Cadmium | 0.293 | 0.0935 | " | " | " | " | " |
| Copper | 14.1 | 9.35 | " | " | " | " | " |

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

BG04

11/5/2024 12:30:00PM

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

Origins Laboratory E4K0190-05 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | | |
|----------|-------|--|--------|-------|----|---------|------------|------------|----|
| Lead | 21.2 | | 0.935 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Nickel | 11.0 | | 0.935 | " | " | " | " | " | |
| Selenium | 0.296 | | 0.243 | " | " | " | " | " | |
| Silver | ND | | 0.0935 | " | " | " | " | " | Ua |
| Zinc | 65.7 | | 34.6 | " | " | " | " | " | |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|-------|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | 0.188 | 0.167 | 0.419 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | J |
|---------------------|-------|-------|-------|-----------|---|---------|------------|------------|---|

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG05

11/5/2024 12:35:00PM

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

Origins Laboratory

E4K0190-06 (Soil)

Boron (DTPA Sorbitol)

| | | | | | | | |
|-------|-------|--------|------|---|---------|------------|------------|
| Boron | 0.878 | 0.0983 | mg/L | 1 | B4K1117 | 11/11/2024 | 11/12/2024 |
|-------|-------|--------|------|---|---------|------------|------------|

Metals by Saturated Paste by EPA 6010

| | | | | | | | |
|-----------|-------|-------|-------|----|--------|------------|------------|
| Calcium | 12.2 | 0.499 | meq/L | 10 | [CALC] | 11/18/2024 | 11/19/2024 |
| Magnesium | 2.00 | 0.823 | " | " | " | " | " |
| Sodium | 0.572 | 0.435 | " | " | " | " | " |

pH in Soil by 9045D

| | | | | | | | |
|----|------|--|----------|---|---------|------------|------------|
| pH | 7.85 | | pH Units | 1 | B4K1917 | 11/19/2024 | 11/20/2024 |
|----|------|--|----------|---|---------|------------|------------|

SAR by 20B Saturated Paste

| | | | | | | | |
|-----|-------|--------|-----|---|---------|------------|------------|
| SAR | 0.215 | 0.0100 | SAR | 1 | B4K1818 | 11/18/2024 | 11/19/2024 |
|-----|-------|--------|-----|---|---------|------------|------------|

Specific Conductance Mod. 9050A

| | | | | | | | |
|---------------------------|-------|---------|----------|---|---------|------------|------------|
| Specific Conductance (EC) | 0.480 | 0.00500 | mmhos/cm | 1 | B4K1917 | 11/19/2024 | 11/20/2024 |
|---------------------------|-------|---------|----------|---|---------|------------|------------|

Table 915 metals by EPA 6020B

| | | | | | | | |
|---------|-------|--------|-------|----|---------|------------|------------|
| Arsenic | 4.30 | 0.276 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 |
| Barium | 286 | 9.52 | " | " | " | " | " |
| Cadmium | 0.294 | 0.0952 | " | " | " | " | " |
| Copper | 15.5 | 9.52 | " | " | " | " | " |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

BG05

11/5/2024 12:35:00PM

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

Origins Laboratory

E4K0190-06 (Soil)

Table 915 metals by EPA 6020B

| | | | | | | | | |
|----------|-------|--------|-------|----|---------|------------|------------|----|
| Lead | 18.5 | 0.952 | mg/kg | 10 | B4K0758 | 11/07/2024 | 11/09/2024 | |
| Nickel | 12.2 | 0.952 | " | " | " | " | " | |
| Selenium | 0.277 | 0.248 | " | " | " | " | " | |
| Silver | ND | 0.0952 | " | " | " | " | " | Ua |
| Zinc | 67.8 | 35.2 | " | " | " | " | " | |

Total Metals 7196A

| | | | | | | | | | |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|
| Hexavalent Chromium | ND | 0.175 | 0.437 | mg/kg dry | 1 | 2713388 | 12/05/2024 | 12/06/2024 | U |
|---------------------|----|-------|-------|-----------|---|---------|------------|------------|---|

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager



Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K0801 - EPA 3550B

Blank (B4K0801-BLK1)

Prepared: 11/08/2024 Analyzed: 11/08/2024

| | | | | | | | | | | |
|-----------------------------------|----|------|-------|------|--|------|--------|--|--|----|
| Diesel (C10-C28) | ND | 25.0 | mg/kg | | | | | | | Ua |
| Residual Range Organics (C28-C40) | ND | 100 | " | | | | | | | Ua |
| Surrogate: o-Terphenyl | 21 | | " | 24.9 | | 83.4 | 50-150 | | | |

Origins Laboratory

Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K0801 - EPA 3550B

LCS (B4K0801-BS1)

Prepared: 11/08/2024 Analyzed: 11/08/2024

| | | | | | | | | | | |
|-----------------------------------|------|------|-------|------|--|------|--------|--|--|--|
| Diesel (C10-C28) | 892 | 50.0 | mg/kg | 1000 | | 89.2 | 70-130 | | | |
| Residual Range Organics (C28-C40) | 1040 | 200 | " | 1000 | | 104 | 70-130 | | | |
| Surrogate: o-Terphenyl | 43 | | " | 49.8 | | 87.2 | 50-150 | | | |

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K0801 - EPA 3550B

| Matrix Spike (B4K0801-MS1) | | Source: E4K0119-02 | | | Prepared: 11/08/2024 Analyzed: 11/08/2024 | | | | | |
|-----------------------------------|------|--------------------|-------|------|---|------|--------|--|--|--|
| Diesel (C10-C28) | 877 | 50.0 | mg/kg | 1000 | ND | 87.7 | 70-130 | | | |
| Residual Range Organics (C28-C40) | 1050 | 200 | " | 1000 | 61.9 | 98.6 | 70-130 | | | |
| Surrogate: o-Terphenyl | 39 | | " | 49.8 | | 79.0 | 50-150 | | | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

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2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

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 |
|-----------------------------------|--------|--------------------|-------|-------------|---|------|-------------|------|-----------|-------|
| Batch B4K0801 - EPA 3550B | | | | | | | | | | |
| Matrix Spike Dup (B4K0801-MSD1) | | Source: E4K0119-02 | | | Prepared: 11/08/2024 Analyzed: 11/08/2024 | | | | | |
| Diesel (C10-C28) | 890 | 50.0 | mg/kg | 1000 | ND | 89.0 | 70-130 | 1.57 | 35 | |
| Residual Range Organics (C28-C40) | 1060 | 200 | " | 1000 | 61.9 | 99.8 | 70-130 | 1.14 | 35 | |
| Surrogate: o-Terphenyl | 41 | | " | 49.8 | | 82.7 | 50-150 | | | |

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|--|--------|-----------------|-------|-------------|---|------|-------------|-----|-----------|-------|
| Batch B4K1001 - EPA 5030 (soil) | | | | | | | | | | |
| Blank (B4K1001-BLK1) | | | | | Prepared: 11/10/2024 Analyzed: 11/10/2024 | | | | | |
| 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 | | 105 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.13 | | " | 0.125 | | 100 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.12 | | " | 0.125 | | 94.0 | 70-130 | | | |

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K1001 - EPA 5030 (soil)

LCS (B4K1001-BS1)

Prepared: 11/10/2024 Analyzed: 11/10/2024

| | | | | | | | | | | |
|----------------------------------|--------|---------|-------|-------|--|------|--------|--|--|--|
| 1,2,4-Trimethylbenzene | 0.0972 | 0.00200 | mg/kg | 0.100 | | 97.2 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 0.0985 | 0.00200 | " | 0.100 | | 98.5 | 70-130 | | | |
| Benzene | 0.0930 | 0.00200 | " | 0.100 | | 93.0 | 70-130 | | | |
| Ethylbenzene | 0.0956 | 0.00200 | " | 0.100 | | 95.6 | 70-130 | | | |
| Naphthalene | 0.111 | 0.00380 | " | 0.100 | | 111 | 70-130 | | | |
| Toluene | 0.0926 | 0.00200 | " | 0.100 | | 92.6 | 70-130 | | | |
| o-Xylene | 0.0963 | 0.00200 | " | 0.100 | | 96.3 | 70-130 | | | |
| m,p-Xylene | 0.192 | 0.00400 | " | 0.200 | | 95.9 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 102 | 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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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K1001 - EPA 5030 (soil)

| Matrix Spike (B4K1001-MS1) | | Source: E4K0169-01 | | | Prepared: 11/10/2024 Analyzed: 11/10/2024 | | | | | |
|----------------------------------|--------|--------------------|-------|-------|---|------|--------|--|--|--|
| 1,2,4-Trimethylbenzene | 0.0953 | 0.00200 | mg/kg | 0.100 | ND | 95.3 | 70-130 | | | |
| 1,3,5-Trimethylbenzene | 0.0965 | 0.00200 | " | 0.100 | ND | 96.5 | 70-130 | | | |
| Benzene | 0.0956 | 0.00200 | " | 0.100 | ND | 95.6 | 70-130 | | | |
| Ethylbenzene | 0.0943 | 0.00200 | " | 0.100 | ND | 94.3 | 70-130 | | | |
| Naphthalene | 0.110 | 0.00380 | " | 0.100 | ND | 110 | 70-130 | | | |
| Toluene | 0.0932 | 0.00200 | " | 0.100 | ND | 93.2 | 70-130 | | | |
| o-Xylene | 0.0948 | 0.00200 | " | 0.100 | ND | 94.8 | 70-130 | | | |
| m,p-Xylene | 0.189 | 0.00400 | " | 0.200 | 0.000520 | 94.3 | 70-130 | | | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 104 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 98.4 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 101 | 70-130 | | | |

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

Batch B4K1001 - EPA 5030 (soil)

| Matrix Spike Dup (B4K1001-MSD1) | | Source: E4K0169-01 | | | Prepared: 11/10/2024 Analyzed: 11/10/2024 | | | | | |
|----------------------------------|--------|--------------------|-------|-------|---|------|--------|------|----|--|
| 1,2,4-Trimethylbenzene | 0.0926 | 0.00200 | mg/kg | 0.100 | ND | 92.6 | 70-130 | 2.89 | 20 | |
| 1,3,5-Trimethylbenzene | 0.0926 | 0.00200 | " | 0.100 | ND | 92.6 | 70-130 | 4.14 | 20 | |
| Benzene | 0.0932 | 0.00200 | " | 0.100 | ND | 93.2 | 70-130 | 2.54 | 20 | |
| Ethylbenzene | 0.0918 | 0.00200 | " | 0.100 | ND | 91.8 | 70-130 | 2.73 | 20 | |
| Naphthalene | 0.105 | 0.00380 | " | 0.100 | ND | 105 | 70-130 | 4.41 | 20 | |
| Toluene | 0.0903 | 0.00200 | " | 0.100 | ND | 90.3 | 70-130 | 3.12 | 20 | |
| o-Xylene | 0.0916 | 0.00200 | " | 0.100 | ND | 91.6 | 70-130 | 3.41 | 20 | |
| m,p-Xylene | 0.184 | 0.00400 | " | 0.200 | 0.000520 | 91.9 | 70-130 | 2.55 | 20 | |
| Surrogate: 1,2-Dichloroethane-d4 | 0.13 | | " | 0.125 | | 105 | 70-130 | | | |
| Surrogate: Toluene-d8 | 0.12 | | " | 0.125 | | 98.6 | 70-130 | | | |
| Surrogate: 4-Bromofluorobenzene | 0.13 | | " | 0.125 | | 102 | 70-130 | | | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

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 B4K0758 - EPA 3050B

Blank (B4K0758-BLK1)

Prepared: 11/07/2024 Analyzed: 11/09/2024

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

LCS (B4K0758-BS1)

Prepared: 11/07/2024 Analyzed: 11/09/2024

| | | | | | | | |
|----------|------|-------|-------|------|--|-----|--------|
| Arsenic | 5.90 | 0.290 | mg/kg | 5.00 | | 118 | 80-120 |
| Barium | 594 | 10.0 | " | 500 | | 119 | 80-120 |
| Cadmium | 5.72 | 0.100 | " | 5.00 | | 114 | 80-120 |
| Copper | 51.7 | 10.0 | " | 50.0 | | 103 | 80-120 |
| Lead | 5.73 | 1.00 | " | 5.00 | | 115 | 80-120 |
| Nickel | 5.16 | 1.00 | " | 5.00 | | 103 | 80-120 |
| Selenium | 5.83 | 0.260 | " | 5.00 | | 117 | 80-120 |
| Silver | 5.97 | 0.100 | " | 5.00 | | 119 | 80-120 |
| Zinc | 57.5 | 37.0 | " | 50.0 | | 115 | 80-120 |

Matrix Spike (B4K0758-MS1)

Source: E4K0192-03

Prepared: 11/07/2024 Analyzed: 11/09/2024

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants

2252 Emerson St.

Denver CO 80205

Patrick Lawler

Project Number: [none]

Project: Bison - Shull Spill

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 B4K0758 - EPA 3050B

| Matrix Spike (B4K0758-MS1) | | Source: E4K0192-03 | | | Prepared: 11/07/2024 Analyzed: 11/09/2024 | | | | | |
|---------------------------------|------|--------------------|-------|------|---|------|--------|-------|----|-------|
| Arsenic | 7.69 | 0.256 | mg/kg | 4.41 | 2.42 | 120 | 75-125 | | | |
| Barium | 715 | 8.82 | " | 441 | 200 | 117 | 75-125 | | | |
| Cadmium | 4.96 | 0.0882 | " | 4.41 | 0.0865 | 111 | 75-125 | | | |
| Copper | 50.1 | 8.82 | " | 44.1 | 5.04 | 102 | 75-125 | | | |
| Lead | 10.8 | 0.882 | " | 4.41 | 4.89 | 134 | 75-125 | | | QM-07 |
| Nickel | 10.4 | 0.882 | " | 4.41 | 5.40 | 113 | 75-125 | | | |
| Selenium | 4.90 | 0.229 | " | 4.41 | 0.105 | 109 | 75-125 | | | |
| Silver | 5.07 | 0.0882 | " | 4.41 | 0.0210 | 115 | 75-125 | | | |
| Zinc | 71.7 | 32.6 | " | 44.1 | 22.6 | 111 | 75-125 | | | |
| Matrix Spike Dup (B4K0758-MSD1) | | Source: E4K0192-03 | | | Prepared: 11/07/2024 Analyzed: 11/09/2024 | | | | | |
| Arsenic | 7.80 | 0.263 | mg/kg | 4.54 | 2.42 | 119 | 75-125 | 1.43 | 20 | |
| Barium | 718 | 9.07 | " | 454 | 200 | 114 | 75-125 | 0.351 | 20 | |
| Cadmium | 4.98 | 0.0907 | " | 4.54 | 0.0865 | 108 | 75-125 | 0.414 | 20 | |
| Copper | 49.4 | 9.07 | " | 45.4 | 5.04 | 97.8 | 75-125 | 1.42 | 20 | |
| Lead | 10.2 | 0.907 | " | 4.54 | 4.89 | 117 | 75-125 | 6.02 | 20 | |
| Nickel | 10.2 | 0.907 | " | 4.54 | 5.40 | 105 | 75-125 | 2.05 | 20 | |
| Selenium | 4.82 | 0.236 | " | 4.54 | 0.105 | 104 | 75-125 | 1.57 | 20 | |
| Silver | 5.08 | 0.0907 | " | 4.54 | 0.0210 | 111 | 75-125 | 0.147 | 20 | |
| Zinc | 72.0 | 33.6 | " | 45.4 | 22.6 | 109 | 75-125 | 0.356 | 20 | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

Classical Chemistry Parameters - Quality Control Origins Laboratory

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|--|--------|-----------------|-------|-------------|---|------|-------------|------|-----------|-------|
| Batch B4K1117 - DTPA Sorbitol Preparation | | | | | | | | | | |
| Blank (B4K1117-BLK1) | | | | | Prepared: 11/11/2024 Analyzed: 11/12/2024 | | | | | |
| Boron | ND | 0.100 | mg/L | | | | | | | Ua |
| Duplicate (B4K1117-DUP1) | | | | | Source: E4K0190-01 Prepared: 11/11/2024 Analyzed: 11/12/2024 | | | | | |
| Boron | 0.464 | 0.101 | mg/L | | 0.376 | | | 21.1 | 50 | |
| Batch B4K1206 - Saturated Paste Metals | | | | | | | | | | |
| Blank (B4K1206-BLK1) | | | | | Prepared: 11/12/2024 Analyzed: 11/13/2024 | | | | | |
| SAR | ND | 0.0100 | SAR | | | | | | | Ua |
| Calcium PPM | ND | 10.0 | mg/L | | | | | | | Ua |
| Magnesium PPM | ND | 10.0 | " | | | | | | | Ua |
| Sodium PPM | ND | 10.0 | " | | | | | | | Ua |
| Duplicate (B4K1206-DUP1) | | | | | Source: E4K0119-02 Prepared: 11/12/2024 Analyzed: 11/13/2024 | | | | | |
| Calcium PPM | 29.6 | 10.0 | mg/L | | 32.2 | | | 8.54 | 50 | |
| SAR | ND | 0.0100 | SAR | | 1.15 | | | | 200 | Ua |
| Magnesium PPM | 31.8 | 10.0 | mg/L | | 38.0 | | | 17.8 | 50 | |
| Sodium PPM | 35.9 | 10.0 | " | | 40.5 | | | 12.1 | 50 | |
| Batch B4K1818 - Saturated Paste Metals | | | | | | | | | | |
| Blank (B4K1818-BLK1) | | | | | Prepared: 11/18/2024 Analyzed: 11/19/2024 | | | | | |
| Calcium PPM | ND | 10.0 | mg/L | | | | | | | Ua |
| SAR | ND | 0.0100 | SAR | | | | | | | Ua |
| Magnesium PPM | ND | 10.0 | mg/L | | | | | | | Ua |
| Sodium PPM | ND | 10.0 | " | | | | | | | Ua |

Origins Laboratory



Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

Classical Chemistry Parameters - Quality Control Origins Laboratory

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

Batch B4K1818 - Saturated Paste Metals

| Duplicate (B4K1818-DUP1) | | Source: E4K0455-01 | | | Prepared: 11/18/2024 Analyzed: 11/19/2024 | | | | | |
|--------------------------|------|--------------------|------|--|---|--|--|------|-----|----|
| Calcium PPM | 47.9 | 10.0 | mg/L | | 45.1 | | | 6.11 | 50 | |
| SAR | ND | 0.0100 | SAR | | 3.31 | | | | 200 | Ua |
| Magnesium PPM | 11.5 | 10.0 | mg/L | | 10.8 | | | 5.92 | 50 | |
| Sodium PPM | 100 | 10.0 | " | | 95.4 | | | 4.89 | 50 | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

Saturated Paste - Quality Control
Origins Laboratory

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

Batch B4K1211 - Saturated Paste pH/EC

Blank (B4K1211-BLK1)

Prepared: 11/12/2024 Analyzed: 11/13/2024

| | | | | | | | | | | |
|---------------------------|----|---------|----------|--|--|--|--|--|--|----|
| Specific Conductance (EC) | ND | 0.00500 | mmhos/cm | | | | | | | Ua |
|---------------------------|----|---------|----------|--|--|--|--|--|--|----|

Duplicate (B4K1211-DUP1)

Source: E4K0119-02

Prepared: 11/12/2024 Analyzed: 11/13/2024

| | | | | | | | | | | |
|---------------------------|-------|---------|----------|--|-------|--|--|-------|----|--|
| Specific Conductance (EC) | 0.585 | 0.00500 | mmhos/cm | | 0.686 | | | 15.8 | 25 | |
| pH | 7.97 | | pH Units | | 7.96 | | | 0.126 | 25 | |

Batch B4K1917 - Saturated Paste pH/EC

Blank (B4K1917-BLK1)

Prepared: 11/19/2024 Analyzed: 11/20/2024

| | | | | | | | | | | |
|---------------------------|----|---------|----------|--|--|--|--|--|--|----|
| Specific Conductance (EC) | ND | 0.00500 | mmhos/cm | | | | | | | Ua |
|---------------------------|----|---------|----------|--|--|--|--|--|--|----|

Duplicate (B4K1917-DUP1)

Source: E4K0514-01

Prepared: 11/19/2024 Analyzed: 11/20/2024

| | | | | | | | | | | |
|---------------------------|------|---------|----------|--|------|--|--|-------|----|--|
| Specific Conductance (EC) | 1.35 | 0.00500 | mmhos/cm | | 1.61 | | | 17.7 | 25 | |
| pH | 8.11 | | pH Units | | 8.03 | | | 0.991 | 25 | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

Total Metals 7196A - Quality Control GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-------------------------------|--------|-----------------|-----------|-------------|---|------|-------------|-----|-----------|-------|
| Batch 2713388 - SW846 3060A | | | | | | | | | | |
| BLANK (1205934491-BLK) | | | | | Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | ND | 0.281 | mg/kg | | | | - | | | U |
| LCS (1205934492-BKS) | | | | | Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | 2.64 | 0.271 | mg/kg | 2.71 | | 97.2 | 80-120 | | | |
| DUP (1205934493 D) | | | | | Source: 694667001 Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | ND | 0.483 | mg/kg dry | | <0.193 | | 0-50 | N/A | 50 | U |
| MS (1205934494 S) | | | | | Source: 694667001 Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | 4.05 | 0.483 | mg/kg dry | 4.83 | <0.193 | 81.6 | 75-125 | | | |
| DUP (1205934495 D) | | | | | Source: 694674001 Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | ND | 0.303 | mg/kg dry | | <0.121 | | 0-50 | N/A | 50 | U |
| MS (1205934496 S) | | | | | Source: 694674001 Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | 2.30 | 0.303 | mg/kg dry | 3.03 | <0.121 | 73.7 | 75-125 | | | |
| ILCS (1205934497-ILCS) | | | | | Prepared: 12/05/2024 Analyzed: 12/06/2024 | | | | | |
| Hexavalent Chromium | 5.18 | 0.244 | mg/kg | 4.92 | | 105 | 80-120 | | | |

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

PAH by 3541/8270 - Quality Control
GEL Laboratories, LLC

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

Batch 2708362 - SW846 3541

BLANK (1205924802-BLK)

Prepared: 11/20/2024 Analyzed: 11/20/2024

| | | | | | | | | | | |
|------------------------|----|---------|-------|--|--|--|---|--|--|---|
| Benzo(k)fluoranthene | ND | 0.00327 | mg/kg | | | | - | | | U |
| Pyrene | ND | 0.00327 | " | | | | - | | | U |
| Naphthalene | ND | 0.00327 | " | | | | - | | | U |
| Indeno(1,2,3-cd)pyrene | ND | 0.00327 | " | | | | - | | | U |
| Fluorene | ND | 0.00327 | " | | | | - | | | U |
| Fluoranthene | ND | 0.00327 | " | | | | - | | | U |
| Dibenzo(a,h)anthracene | ND | 0.00327 | " | | | | - | | | U |
| Chrysene | ND | 0.00327 | " | | | | - | | | U |
| Benzo(b)fluoranthene | ND | 0.00327 | " | | | | - | | | U |
| Benzo(a)pyrene | ND | 0.00327 | " | | | | - | | | U |
| Benzo(a)anthracene | ND | 0.00327 | " | | | | - | | | U |
| Anthracene | ND | 0.00327 | " | | | | - | | | U |
| Acenaphthene | ND | 0.00327 | " | | | | - | | | U |
| 1-Methylnaphthalene | ND | 0.00327 | " | | | | - | | | U |
| 2-Methylnaphthalene | ND | 0.00327 | " | | | | - | | | U |

Surrogate: 5-alpha-Androstane

0.152

"

0.163

93

22-135

LCS (1205924803-BKS)

Prepared: 11/20/2024 Analyzed: 11/20/2024

| | | | | | | | |
|------------------------|-------|---------|-------|-------|--|-----|--------|
| Benzo(k)fluoranthene | 0.327 | 0.00331 | mg/kg | 0.331 | | 99 | 40-122 |
| Fluorene | 0.346 | 0.00331 | " | 0.331 | | 105 | 37-115 |
| Indeno(1,2,3-cd)pyrene | 0.372 | 0.00331 | " | 0.331 | | 112 | 38-133 |
| Pyrene | 0.353 | 0.00331 | " | 0.331 | | 107 | 38-117 |
| Fluoranthene | 0.354 | 0.00331 | " | 0.331 | | 107 | 39-119 |
| Dibenzo(a,h)anthracene | 0.396 | 0.00331 | " | 0.331 | | 120 | 38-132 |
| Chrysene | 0.330 | 0.00331 | " | 0.331 | | 100 | 42-117 |
| 1-Methylnaphthalene | 0.333 | 0.00331 | " | 0.331 | | 101 | 39-109 |
| Naphthalene | 0.330 | 0.00331 | " | 0.331 | | 100 | 38-109 |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

PAH by 3541/8270 - Quality Control GEL Laboratories, LLC

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

Batch 2708362 - SW846 3541

LCS (1205924803-BKS)

Prepared: 11/20/2024 Analyzed: 11/20/2024

| | | | | | | | | | | |
|-------------------------------|-------|---------|-------|-------|--|-----|--------|--|--|--|
| 2-Methylnaphthalene | 0.347 | 0.00331 | mg/kg | 0.331 | | 105 | 39-110 | | | |
| Acenaphthene | 0.340 | 0.00331 | " | 0.331 | | 103 | 41-112 | | | |
| Anthracene | 0.357 | 0.00331 | " | 0.331 | | 108 | 41-117 | | | |
| Benzo(a)anthracene | 0.380 | 0.00331 | " | 0.331 | | 115 | 42-120 | | | |
| Benzo(a)pyrene | 0.381 | 0.00331 | " | 0.331 | | 115 | 39-127 | | | |
| Benzo(b)fluoranthene | 0.358 | 0.00331 | " | 0.331 | | 108 | 39-123 | | | |
| Surrogate: 5-alpha-Androstane | 0.157 | | " | 0.166 | | 95 | 22-135 | | | |

LCSD (1205924804-BKSD)

Prepared: 11/20/2024 Analyzed: 11/20/2024

| | | | | | | | | | | |
|-------------------------------|-------|---------|-------|-------|--|-----|--------|---|----|--|
| Benzo(a)pyrene | 0.384 | 0.00332 | mg/kg | 0.332 | | 116 | 39-127 | 1 | 30 | |
| Chrysene | 0.334 | 0.00332 | " | 0.332 | | 100 | 42-117 | 1 | 30 | |
| Pyrene | 0.358 | 0.00332 | " | 0.332 | | 108 | 38-117 | 1 | 30 | |
| Naphthalene | 0.336 | 0.00332 | " | 0.332 | | 101 | 38-109 | 2 | 30 | |
| Indeno(1,2,3-cd)pyrene | 0.377 | 0.00332 | " | 0.332 | | 114 | 38-133 | 1 | 30 | |
| Fluorene | 0.353 | 0.00332 | " | 0.332 | | 106 | 37-115 | 2 | 30 | |
| Fluoranthene | 0.359 | 0.00332 | " | 0.332 | | 108 | 39-119 | 1 | 30 | |
| Dibenzo(a,h)anthracene | 0.401 | 0.00332 | " | 0.332 | | 121 | 38-132 | 1 | 30 | |
| 2-Methylnaphthalene | 0.355 | 0.00332 | " | 0.332 | | 107 | 39-110 | 2 | 30 | |
| Benzo(b)fluoranthene | 0.353 | 0.00332 | " | 0.332 | | 106 | 39-123 | 1 | 30 | |
| Benzo(a)anthracene | 0.383 | 0.00332 | " | 0.332 | | 115 | 42-120 | 1 | 30 | |
| Anthracene | 0.359 | 0.00332 | " | 0.332 | | 108 | 41-117 | 1 | 30 | |
| Acenaphthene | 0.347 | 0.00332 | " | 0.332 | | 104 | 41-112 | 2 | 30 | |
| Benzo(k)fluoranthene | 0.342 | 0.00332 | " | 0.332 | | 103 | 40-122 | 4 | 30 | |
| 1-Methylnaphthalene | 0.341 | 0.00332 | " | 0.332 | | 103 | 39-109 | 2 | 30 | |
| Surrogate: 5-alpha-Androstane | 0.152 | | " | 0.166 | | 92 | 22-135 | | | |

MS (1205924805 S)

Source: 695644022

Prepared: 11/20/2024 Analyzed: 11/20/2024

Origins Laboratory



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Jen Pellegrini For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

PAH by 3541/8270 - Quality Control
GEL Laboratories, LLC

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

Batch 2708362 - SW846 3541

| | | | | | | | | | | |
|-------------------------------|--------|--------------------------|-----------|-------|---|----|--------|--|--|--|
| MS (1205924805 S) | | Source: 695644022 | | | Prepared: 11/20/2024 Analyzed: 11/20/2024 | | | | | |
| Dibenzo(a,h)anthracene | 0.181 | 0.00373 | mg/kg dry | 0.373 | <0.00123 | 49 | 11-134 | | | |
| Fluoranthene | 0.161 | 0.00373 | " | 0.373 | <0.00123 | 43 | 14-136 | | | |
| Pyrene | 0.162 | 0.00373 | " | 0.373 | <0.00123 | 43 | 12-139 | | | |
| Fluorene | 0.155 | 0.00373 | " | 0.373 | <0.00123 | 42 | 16-134 | | | |
| Naphthalene | 0.144 | 0.00373 | " | 0.373 | <0.00123 | 39 | 16-126 | | | |
| Chrysene | 0.155 | 0.00373 | " | 0.373 | <0.00123 | 42 | 19-129 | | | |
| Indeno(1,2,3-cd)pyrene | 0.170 | 0.00373 | " | 0.373 | <0.00123 | 45 | 13-134 | | | |
| Benzo(b)fluoranthene | 0.164 | 0.00373 | " | 0.373 | <0.00123 | 44 | 14-136 | | | |
| Benzo(a)pyrene | 0.176 | 0.00373 | " | 0.373 | <0.00123 | 47 | 16-133 | | | |
| Benzo(a)anthracene | 0.177 | 0.00373 | " | 0.373 | <0.00123 | 47 | 20-132 | | | |
| Acenaphthene | 0.152 | 0.00373 | " | 0.373 | <0.00123 | 41 | 17-129 | | | |
| 2-Methylnaphthalene | 0.152 | 0.00373 | " | 0.373 | <0.00123 | 41 | 15-132 | | | |
| 1-Methylnaphthalene | 0.147 | 0.00373 | " | 0.373 | <0.00123 | 39 | 15-129 | | | |
| Anthracene | 0.160 | 0.00373 | " | 0.373 | <0.00123 | 43 | 18-136 | | | |
| Benzo(k)fluoranthene | 0.152 | 0.00373 | " | 0.373 | <0.00123 | 41 | 18-138 | | | |
| Surrogate: 5-alpha-Androstane | 0.0831 | | " | 0.186 | 0.155 | 45 | 22-135 | | | |

| | | | | | | | | | | |
|----------------------------|-------|--------------------------|-----------|-------|---|----|--------|----|----|--|
| MSD (1205924806 SD) | | Source: 695644022 | | | Prepared: 11/20/2024 Analyzed: 11/20/2024 | | | | | |
| Naphthalene | 0.201 | 0.00376 | mg/kg dry | 0.376 | <0.00124 | 54 | 16-126 | 33 | 30 | |
| Chrysene | 0.220 | 0.00376 | " | 0.376 | <0.00124 | 59 | 19-129 | 35 | 30 | |
| Dibenzo(a,h)anthracene | 0.254 | 0.00376 | " | 0.376 | <0.00124 | 68 | 11-134 | 33 | 30 | |
| Fluoranthene | 0.234 | 0.00376 | " | 0.376 | <0.00124 | 62 | 14-136 | 37 | 30 | |
| Benzo(k)fluoranthene | 0.221 | 0.00376 | " | 0.376 | <0.00124 | 59 | 18-138 | 37 | 30 | |
| Indeno(1,2,3-cd)pyrene | 0.237 | 0.00376 | " | 0.376 | <0.00124 | 63 | 13-134 | 33 | 30 | |
| Acenaphthene | 0.220 | 0.00376 | " | 0.376 | <0.00124 | 59 | 17-129 | 37 | 30 | |
| Fluorene | 0.228 | 0.00376 | " | 0.376 | <0.00124 | 61 | 16-134 | 38 | 30 | |
| Benzo(b)fluoranthene | 0.226 | 0.00376 | " | 0.376 | <0.00124 | 60 | 14-136 | 31 | 30 | |

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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 For Jordan A. Bynon, Project Manager

Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

PAH by 3541/8270 - Quality Control GEL Laboratories, LLC

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|-------------------------------|--------|-------------------|-----------|-------------|---|------|-------------|-----|-----------|-------|
| Batch 2708362 - SW846 3541 | | | | | | | | | | |
| MSD (1205924806 SD) | | Source: 695644022 | | | Prepared: 11/20/2024 Analyzed: 11/20/2024 | | | | | |
| Benzo(a)pyrene | 0.249 | 0.00376 | mg/kg dry | 0.376 | <0.00124 | 66 | 16-133 | 34 | 30 | |
| Anthracene | 0.238 | 0.00376 | " | 0.376 | <0.00124 | 63 | 18-136 | 39 | 30 | |
| 2-Methylnaphthalene | 0.218 | 0.00376 | " | 0.376 | <0.00124 | 58 | 15-132 | 35 | 30 | |
| 1-Methylnaphthalene | 0.211 | 0.00376 | " | 0.376 | <0.00124 | 56 | 15-129 | 36 | 30 | |
| Pyrene | 0.234 | 0.00376 | " | 0.376 | <0.00124 | 62 | 12-139 | 36 | 30 | |
| Benzo(a)anthracene | 0.249 | 0.00376 | " | 0.376 | <0.00124 | 66 | 20-132 | 34 | 30 | |
| Surrogate: 5-alpha-Androstane | 0.0962 | | " | 0.188 | 0.155 | 51 | 22-135 | | | |

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Jen Pellegrini For Jordan A. Bynon, Project Manager

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Quandary Consultants
2252 Emerson St.
Denver CO 80205

Patrick Lawler
Project Number: [none]
Project: Bison - Shull Spill

Notes and Definitions

Ua Sample is Non-Detect.

U Result not detected above the detection limit

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J Greater than the detection limit but less than the reporting limit

hU [Undefined]

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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Jen Pellegrini For Jordan A. Bynon, Project Manager