



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

May 19, 2015

Adrian Griego

Microbial Energy

PO Box 1346

Aztec, NM 87410

TEL: (505) 419-0541

FAX

**RECEIVED**

**By OCD District 1 at 8:18 am, May 28, 2015**

RE: NM BG

OrderNo.: 1505481

Dear Adrian Griego:

Hall Environmental Analysis Laboratory received 6 sample(s) on 5/12/2015 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 2

**Project:** NM BG

**Collection Date:** 5/8/2015 4:00:00 PM

**Lab ID:** 1505481-001

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL   | Qual | Units | DF  | Date Analyzed         | Batch               |
|---------------------------------|--------|------|------|-------|-----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |      |      |       |     |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 10000  | 1900 |      | mg/Kg | 100 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |      |      |       |     |                       | Analyst: <b>LGT</b> |
| Chloride                        | 1500   | 75   |      | mg/Kg | 50  | 5/19/2015 5:15:17 AM  | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |             |
|--------------------|---|---|----|--|-------------|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    | Page 1 of 8 |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |             |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |             |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |             |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |             |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 4

**Project:** NM BG

**Collection Date:** 5/8/2015 4:05:00 PM

**Lab ID:** 1505481-002

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL   | Qual | Units | DF  | Date Analyzed         | Batch               |
|---------------------------------|--------|------|------|-------|-----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |      |      |       |     |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 9900   | 2000 |      | mg/Kg | 100 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |      |      |       |     |                       | Analyst: <b>LGT</b> |
| Chloride                        | 230    | 7.5  |      | mg/Kg | 5   | 5/15/2015 12:51:02 PM | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |             |
|--------------------|---|---|----|--|-------------|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    | Page 2 of 8 |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |             |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |             |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |             |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |             |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 1

**Project:** NM BG

**Collection Date:** 5/8/2015 4:10:00 PM

**Lab ID:** 1505481-003

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL   | Qual | Units | DF  | Date Analyzed         | Batch               |
|---------------------------------|--------|------|------|-------|-----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |      |      |       |     |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 4500   | 2000 |      | mg/Kg | 100 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |      |      |       |     |                       | Analyst: <b>LGT</b> |
| Chloride                        | 1500   | 75   |      | mg/Kg | 50  | 5/19/2015 5:27:42 AM  | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |             |
|--------------------|---|---|----|--|-------------|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    | Page 3 of 8 |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |             |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |             |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |             |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |             |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 3

**Project:** NM BG

**Collection Date:** 5/8/2015 4:15:00 PM

**Lab ID:** 1505481-004

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL   | Qual | Units | DF  | Date Analyzed         | Batch               |
|---------------------------------|--------|------|------|-------|-----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |      |      |       |     |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 16000  | 2000 |      | mg/Kg | 100 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |      |      |       |     |                       | Analyst: <b>LGT</b> |
| Chloride                        | 740    | 30   |      | mg/Kg | 20  | 5/15/2015 2:17:55 PM  | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |             |
|--------------------|---|---|----|--|-------------|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    | Page 4 of 8 |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |             |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |             |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |             |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |             |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 5

**Project:** NM BG

**Collection Date:** 5/8/2015 4:20:00 PM

**Lab ID:** 1505481-005

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL  | Qual | Units | DF | Date Analyzed         | Batch               |
|---------------------------------|--------|-----|------|-------|----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |     |      |       |    |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 1100   | 200 |      | mg/Kg | 10 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |     |      |       |    |                       | Analyst: <b>LGT</b> |
| Chloride                        | 500    | 30  |      | mg/Kg | 20 | 5/15/2015 2:42:44 PM  | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |
|--------------------|---|---|----|--|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |

# Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order **1505481**

Date Reported: **5/19/2015**

**CLIENT:** Microbial Energy

**Client Sample ID:** 6

**Project:** NM BG

**Collection Date:** 5/8/2015 4:25:00 PM

**Lab ID:** 1505481-006

**Matrix:** SOIL

**Received Date:** 5/12/2015 7:00:00 AM

| Analyses                        | Result | RL   | Qual | Units | DF  | Date Analyzed         | Batch               |
|---------------------------------|--------|------|------|-------|-----|-----------------------|---------------------|
| <b>EPA METHOD 418.1: TPH</b>    |        |      |      |       |     |                       | Analyst: <b>JME</b> |
| Petroleum Hydrocarbons, TR      | 5400   | 2000 |      | mg/Kg | 100 | 5/14/2015 12:00:00 PM | 19186               |
| <b>EPA METHOD 300.0: ANIONS</b> |        |      |      |       |     |                       | Analyst: <b>LGT</b> |
| Chloride                        | 520    | 30   |      | mg/Kg | 20  | 5/15/2015 3:07:32 PM  | 19250               |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

|                    |   |   |    |  |             |
|--------------------|---|---|----|--|-------------|
| <b>Qualifiers:</b> | * | Value exceeds Maximum Contaminant Level.        | B  | Analyte detected in the associated Method Blank    | Page 6 of 8 |
|                    | E | Value above quantitation range                  | H  | Holding times for preparation or analysis exceeded |             |
|                    | J | Analyte detected below quantitation limits      | ND | Not Detected at the Reporting Limit                |             |
|                    | O | RSD is greater than RSDlimit                    | P  | Sample pH Not In Range                             |             |
|                    | R | RPD outside accepted recovery limits            | RL | Reporting Detection Limit                          |             |
|                    | S | Spike Recovery outside accepted recovery limits |    |  |             |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1505481

19-May-15

Client: Microbial Energy

Project: NM BG

|            |           |     |                          |             |                                    |          |              |      |          |      |
|------------|-----------|-----|--------------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Sample ID  | MB-19250  |     | SampType: MBLK           |             | TestCode: EPA Method 300.0: Anions |          |              |      |          |      |
| Client ID: | PBS       |     | Batch ID: 19250          |             | RunNo: 26253                       |          |              |      |          |      |
| Prep Date: | 5/15/2015 |     | Analysis Date: 5/15/2015 |             | SeqNo: 779535                      |          | Units: mg/Kg |      |          |      |
| Analyte    | Result    | PQL | SPK value                | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Chloride   | ND        | 1.5 |                          |             |                                    |          |              |      |          |      |

|            |           |     |                          |             |                                    |          |              |      |          |      |
|------------|-----------|-----|--------------------------|-------------|------------------------------------|----------|--------------|------|----------|------|
| Sample ID  | LCS-19250 |     | SampType: LCS            |             | TestCode: EPA Method 300.0: Anions |          |              |      |          |      |
| Client ID: | LCSS      |     | Batch ID: 19250          |             | RunNo: 26253                       |          |              |      |          |      |
| Prep Date: | 5/15/2015 |     | Analysis Date: 5/15/2015 |             | SeqNo: 779536                      |          | Units: mg/Kg |      |          |      |
| Analyte    | Result    | PQL | SPK value                | SPK Ref Val | %REC                               | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Chloride   | 14        | 1.5 | 15.00                    | 0           | 93.2                               | 90       | 110          |      |          |      |

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH Not In Range  
RL Reporting Detection Limit



# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1505481

19-May-15

Client: Microbial Energy

Project: NM BG

|                            |           |     |                |             |      |           |                       |      |              |      |  |
|----------------------------|-----------|-----|----------------|-------------|------|-----------|-----------------------|------|--------------|------|--|
| Sample ID                  | MB-19186  |     | SampType:      | MBLK        |      | TestCode: | EPA Method 418.1: TPH |      |              |      |  |
| Client ID:                 | PBS       |     | Batch ID:      | 19186       |      | RunNo:    | 26196                 |      |              |      |  |
| Prep Date:                 | 5/12/2015 |     | Analysis Date: | 5/14/2015   |      | SeqNo:    | 777300                |      | Units: mg/Kg |      |  |
| Analyte                    | Result    | PQL | SPK value      | SPK Ref Val | %REC | LowLimit  | HighLimit             | %RPD | RPDLimit     | Qual |  |
| Petroleum Hydrocarbons, TR | ND        | 20  |                |             |      |           |                       |      |              |      |  |

|                            |           |     |           |                |           |          |           |                       |          |        |       |
|----------------------------|-----------|-----|-----------|----------------|-----------|----------|-----------|-----------------------|----------|--------|-------|
| Sample ID                  | LCS-19186 |     |           | SampType:      | LCS       |          | TestCode: | EPA Method 418.1: TPH |          |        |       |
| Client ID:                 | LCSS      |     |           | Batch ID:      | 19186     |          | RunNo:    | 26196                 |          |        |       |
| Prep Date:                 | 5/12/2015 |     |           | Analysis Date: | 5/14/2015 |          | SeqNo:    | 777301                |          | Units: | mg/Kg |
| Analyte                    | Result    | PQL | SPK value | SPK Ref Val    | %REC      | LowLimit | HighLimit | %RPD                  | RPDLimit | Qual   |       |
| Petroleum Hydrocarbons, TR | 96        | 20  | 100.0     | 0              | 95.6      | 86.7     | 126       |                       |          |        |       |

|                            |            |     |                          |             |                                 |          |              |      |          |      |
|----------------------------|------------|-----|--------------------------|-------------|---------------------------------|----------|--------------|------|----------|------|
| Sample ID                  | LCSD-19186 |     | SampType: LCSD           |             | TestCode: EPA Method 418.1: TPH |          |              |      |          |      |
| Client ID:                 | LCSS02     |     | Batch ID: 19186          |             | RunNo: 26196                    |          |              |      |          |      |
| Prep Date:                 | 5/12/2015  |     | Analysis Date: 5/14/2015 |             | SeqNo: 777302                   |          | Units: mg/Kg |      |          |      |
| Analyte                    | Result     | PQL | SPK value                | SPK Ref Val | %REC                            | LowLimit | HighLimit    | %RPD | RPDLimit | Qual |
| Petroleum Hydrocarbons, TR | 94         | 20  | 100.0                    | 0           | 94.1                            | 86.7     | 126          | 1.49 | 20       |      |

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
E Value above quantitation range  
J Analyte detected below quantitation limits  
O RSD is greater than RSDlimit  
R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
P Sample pH Not In Range  
RL Reporting Detection Limit

# Sample Log-In Check List

Client Name: **MICROBIAL ENERGY**

Work Order Number: **1505481**

RcptNo: 1

Received by/date:

Logged By: **Lindsay Mangin**

5/12/2015 7:00:00 AM

Completed By: **Lindsay Mangin**

5/12/2015 9:12:00 AM

Reviewed By:

## Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

## Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:  
(<2 or >12 unless noted)  
Adjusted?  
Checked by:

## Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

## 18. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1         | 2.8     | Good      | Yes         |         |           |           |

