ACZ Laboratories, Inc.
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# Analytical Report

May 03, 2012

Report to:
Steve Shute
Lone Pine Gas, Inc.
PO Box 1054
Glenwood Springs, CO 81602

Bill to:
C/O Warren Associates, Inc.
Lone Pine Gas, Inc.
Roy Warren 4505 S. Broadway
Englewood, CO 80113

cc: Randy Miller

Project ID: LONE PINE GAS
ACZ Project ID: L94083

Steve Shute:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 17, 2012. This project has been assigned to ACZ's project number, L94083. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L94083. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after June 03, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

Lone Pine Gas, Inc. May 03, 2012

Project ID: LONE PINE GAS
ACZ Project ID: L94083

## Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 5 ground water samples from Lone Pine Gas, Inc. on April 17, 2012. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L94083. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

## Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

## Sample Analysis

These samples were analyzed for inorganic and organic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. The Total Petroleum Hydrocarbon analysis was qualified with the ACZ 'S13' flag (sample -01) due to low surrogate recoveries. However, as there was insufficient sample remaining for re-analysis, the data was accepted.

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: POND 5

ACZ Sample ID: ***L94083-01***
Date Sampled: *04/13/12 15:25*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

Metals Analysis

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Calcium, dissolved | M200.7 ICP | 23.4 | | | mg/L | 0.2 | 1 | 04/23/12 21:41 | aeb |
| Iron, dissolved | M200.7 ICP | 0.08 | | | mg/L | 0.02 | 0.05 | 04/23/12 21:41 | aeb |
| Magnesium, dissolved | M200.7 ICP | 10.1 | | | mg/L | 0.2 | 1 | 04/23/12 21:41 | aeb |
| Manganese, dissolved | M200.7 ICP | 0.023 | B | | mg/L | 0.005 | 0.03 | 04/23/12 21:41 | aeb |
| Potassium, dissolved | M200.7 ICP | 11.3 | | | mg/L | 0.3 | 2 | 04/23/12 21:41 | aeb |
| Selenium, dissolved | M200.8 ICP-MS | | U | * | mg/L | 0.0001 | 0.0003 | 04/26/12 21:33 | scp |
| Sodium, dissolved | M200.7 ICP | 298 | | | mg/L | 0.3 | 2 | 04/23/12 21:41 | aeb |

Wet Chemistry

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Alkalinity as CaCO3 | SM2320B - Titration | | | | | | | | |
| Bicarbonate as CaCO3 | | 678 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Carbonate as CaCO3 | | 63 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Hydroxide as CaCO3 | | | U | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Total Alkalinity | | 741 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Bromide | M300.0 - Ion Chromatography | 0.080 | | * | mg/L | 0.01 | 0.05 | 04/25/12 12:21 | ccp |
| Chloride | M300.0 - Ion Chromatography | 20.99 | | * | mg/L | 0.5 | 2.5 | 04/25/12 12:21 | ccp |
| Conductivity @25C | SM2510B | 1400 | | | umhos/cm | 1 | 10 | 04/18/12 1:06 | mla |
| Fluoride | M300.0 - Ion Chromatography | 1.54 | | * | mg/L | 0.1 | 0.5 | 04/25/12 12:21 | ccp |
| Lab Filtration (0.45um) & Acidification | M200.7/200.8 | | | | | | | 04/19/12 15:55 | mfm |
| Lab Filtration (glass fiber filter) | SOPWC050 | | | | | | | 04/18/12 11:43 | abm |
| Nitrate as N, dissolved | Calculation: NO3NO2 minus NO2 | 0.03 | BH | | mg/L | 0.02 | 0.1 | 05/03/12 12:55 | calc |
| Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | 0.03 | BH | * | mg/L | 0.02 | 0.1 | 04/17/12 20:11 | pjb |
| Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 20:11 | pjb |
| pH (lab) | SM4500H+ B | | | | | | | | |
| pH | | 8.6 | H | | units | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| pH measured at | | 19.0 | | | C | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | 0.02 | BH | * | mg/L | 0.01 | 0.05 | 04/17/12 22:26 | pjb |
| Residue, Filterable (TDS) @180C | SM2540C | 910 | | | mg/L | 10 | 20 | 04/17/12 14:37 | las |
| Sodium Absorption Ratio in Water | USGS - I1738-78 | 13.10 | | | | 0.03 | 0.15 | 05/03/12 12:55 | calc |
| Sulfate | M300.0 - Ion Chromatography | 1.67 | B | | mg/L | 0.5 | 2.5 | 04/25/12 12:21 | ccp |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH UP

ACZ Sample ID: ***L94083-02***
Date Sampled: *04/13/12 16:00*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

Metals Analysis

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Calcium, dissolved | M200.7 ICP | 33.5 | | | mg/L | 0.2 | 1 | 04/23/12 21:51 | aeb |
| Iron, dissolved | M200.7 ICP | 0.15 | | | mg/L | 0.02 | 0.05 | 04/23/12 21:51 | aeb |
| Magnesium, dissolved | M200.7 ICP | 8.1 | | | mg/L | 0.2 | 1 | 04/23/12 21:51 | aeb |
| Manganese, dissolved | M200.7 ICP | 0.061 | | | mg/L | 0.005 | 0.03 | 04/23/12 21:51 | aeb |
| Potassium, dissolved | M200.7 ICP | 1.2 | B | | mg/L | 0.3 | 2 | 04/23/12 21:51 | aeb |
| Selenium, dissolved | M200.8 ICP-MS | 0.0002 | B | | mg/L | 0.0001 | 0.0003 | 04/28/12 1:30 | pmc |
| Sodium, dissolved | M200.7 ICP | 5.9 | | | mg/L | 0.3 | 2 | 04/23/12 21:51 | aeb |

Wet Chemistry

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Alkalinity as CaCO3 | SM2320B - Titration | | | | | | | | |
| Bicarbonate as CaCO3 | | 112 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Carbonate as CaCO3 | | 6 | B | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Hydroxide as CaCO3 | | | U | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Total Alkalinity | | 118 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Bromide | M300.0 - Ion Chromatography | | U | * | mg/L | 0.01 | 0.05 | 04/24/12 21:41 | ccp |
| Chloride | M300.0 - Ion Chromatography | 1.09 | B | * | mg/L | 0.5 | 2.5 | 04/24/12 21:41 | ccp |
| Conductivity @25C | SM2510B | 256 | | | umhos/cm | 1 | 10 | 04/18/12 1:14 | mla |
| Fluoride | M300.0 - Ion Chromatography | 0.73 | | * | mg/L | 0.1 | 0.5 | 04/24/12 21:41 | ccp |
| Lab Filtration (0.45um) & Acidification | M200.7/200.8 | | | | | | | 04/19/12 15:56 | mfm |
| Lab Filtration (glass fiber filter) | SOPWC050 | | | | | | | 04/18/12 11:44 | abm |
| Nitrate as N, dissolved | Calculation: NO3NO2 minus NO2 | | UH | | mg/L | 0.02 | 0.1 | 05/03/12 12:55 | calc |
| Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.02 | 0.1 | 04/17/12 20:12 | pjb |
| Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 20:12 | pjb |
| pH (lab) | SM4500H+ B | | | | | | | | |
| pH | | 8.5 | H | | units | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| pH measured at | | 20.0 | | | C | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 22:27 | pjb |
| Residue, Filterable (TDS) @180C | SM2540C | 170 | | | mg/L | 10 | 20 | 04/17/12 14:38 | las |
| Sodium Absorption Ratio in Water | USGS - I1738-78 | 0.24 | | | | 0.03 | 0.15 | 05/03/12 12:55 | calc |
| Sulfate | M300.0 - Ion Chromatography | 10.14 | | | mg/L | 0.5 | 2.5 | 04/24/12 21:41 | ccp |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK UP

ACZ Sample ID: ***L94083-03***
Date Sampled: *04/13/12 16:45*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

Metals Analysis

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Calcium, dissolved | M200.7 ICP | 84.1 | | | mg/L | 0.2 | 1 | 04/23/12 21:54 | aeb |
| Iron, dissolved | M200.7 ICP | 0.05 | | | mg/L | 0.02 | 0.05 | 04/23/12 21:54 | aeb |
| Magnesium, dissolved | M200.7 ICP | 40.5 | | | mg/L | 0.2 | 1 | 04/23/12 21:54 | aeb |
| Manganese, dissolved | M200.7 ICP | 0.124 | | | mg/L | 0.005 | 0.03 | 04/23/12 21:54 | aeb |
| Potassium, dissolved | M200.7 ICP | 2.7 | | | mg/L | 0.3 | 2 | 04/23/12 21:54 | aeb |
| Selenium, dissolved | M200.8 ICP-MS | 0.0010 | | | mg/L | 0.0001 | 0.0003 | 04/28/12 1:33 | pmc |
| Sodium, dissolved | M200.7 ICP | 26.3 | | | mg/L | 0.3 | 2 | 04/23/12 21:54 | aeb |

Wet Chemistry

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Alkalinity as CaCO3 | SM2320B - Titration | | | | | | | | |
| Bicarbonate as CaCO3 | | 196 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Carbonate as CaCO3 | | 10 | B | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Hydroxide as CaCO3 | | | U | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Total Alkalinity | | 206 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Bromide | M300.0 - Ion Chromatography | | U | * | mg/L | 0.05 | 0.25 | 04/25/12 12:42 | ccp |
| Chloride | M300.0 - Ion Chromatography | 4.34 | | * | mg/L | 0.5 | 2.5 | 04/24/12 22:02 | ccp |
| Conductivity @25C | SM2510B | 792 | | | umhos/cm | 1 | 10 | 04/18/12 1:23 | mla |
| Fluoride | M300.0 - Ion Chromatography | 0.41 | B | * | mg/L | 0.1 | 0.5 | 04/24/12 22:02 | ccp |
| Lab Filtration (0.45um) & Acidification | M200.7/200.8 | | | | | | | 04/19/12 15:56 | mfm |
| Lab Filtration (glass fiber filter) | SOPWC050 | | | | | | | 04/18/12 11:45 | abm |
| Nitrate as N, dissolved | Calculation: NO3NO2 minus NO2 | | UH | | mg/L | 0.02 | 0.1 | 05/03/12 12:55 | calc |
| Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.02 | 0.1 | 04/17/12 20:14 | pjb |
| Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 20:14 | pjb |
| pH (lab) | SM4500H+ B | | | | | | | | |
| pH | | 8.4 | H | | units | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| pH measured at | | 19.0 | | | C | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | 0.01 | BH | * | mg/L | 0.01 | 0.05 | 04/17/12 22:28 | pjb |
| Residue, Filterable (TDS) @180C | SM2540C | 550 | | | mg/L | 10 | 20 | 04/17/12 14:40 | las |
| Sodium Absorption Ratio in Water | USGS - I1738-78 | 0.6 | | | | 0.03 | 0.15 | 05/03/12 12:55 | calc |
| Sulfate | M300.0 - Ion Chromatography | 209.13 | | | mg/L | 2.5 | 12.5 | 04/25/12 12:42 | ccp |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH DN

ACZ Sample ID: ***L94083-04***
Date Sampled: *04/13/12 17:15*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

Metals Analysis

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Calcium, dissolved | M200.7 ICP | 50.6 | | | mg/L | 0.2 | 1 | 04/23/12 21:57 | aeb |
| Iron, dissolved | M200.7 ICP | 0.06 | | | mg/L | 0.02 | 0.05 | 04/23/12 21:57 | aeb |
| Magnesium, dissolved | M200.7 ICP | 11.7 | | | mg/L | 0.2 | 1 | 04/23/12 21:57 | aeb |
| Manganese, dissolved | M200.7 ICP | 0.082 | | | mg/L | 0.005 | 0.03 | 04/23/12 21:57 | aeb |
| Potassium, dissolved | M200.7 ICP | 3.8 | | | mg/L | 0.3 | 2 | 04/23/12 21:57 | aeb |
| Selenium, dissolved | M200.8 ICP-MS | 0.0005 | | | mg/L | 0.0001 | 0.0003 | 04/28/12 1:41 | pmc |
| Sodium, dissolved | M200.7 ICP | 30.2 | | | mg/L | 0.3 | 2 | 04/23/12 21:57 | aeb |

Wet Chemistry

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Alkalinity as CaCO3 | SM2320B - Titration | | | | | | | | |
| Bicarbonate as CaCO3 | | 199 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Carbonate as CaCO3 | | 10 | B | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Hydroxide as CaCO3 | | | U | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Total Alkalinity | | 210 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Bromide | M300.0 - Ion Chromatography | | U | * | mg/L | 0.01 | 0.05 | 04/24/12 22:44 | ccp |
| Chloride | M300.0 - Ion Chromatography | 3.59 | | * | mg/L | 0.5 | 2.5 | 04/24/12 22:44 | ccp |
| Conductivity @25C | SM2510B | 458 | | | umhos/cm | 1 | 10 | 04/18/12 1:42 | mla |
| Fluoride | M300.0 - Ion Chromatography | 0.83 | | * | mg/L | 0.1 | 0.5 | 04/24/12 22:44 | ccp |
| Lab Filtration (0.45um) & Acidification | M200.7/200.8 | | | | | | | 04/19/12 15:57 | mfm |
| Lab Filtration (glass fiber filter) | SOPWC050 | | | | | | | 04/18/12 11:46 | abm |
| Nitrate as N, dissolved | Calculation: NO3NO2 minus NO2 | | UH | | mg/L | 0.02 | 0.1 | 05/03/12 12:55 | calc |
| Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.02 | 0.1 | 04/17/12 20:15 | pjb |
| Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 20:15 | pjb |
| pH (lab) | SM4500H+ B | | | | | | | | |
| pH | | 8.5 | H | | units | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| pH measured at | | 19.0 | | | C | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 22:35 | pjb |
| Residue, Filterable (TDS) @180C | SM2540C | 280 | | | mg/L | 10 | 20 | 04/17/12 14:41 | las |
| Sodium Absorption Ratio in Water | USGS - I1738-78 | 1.01 | | | | 0.03 | 0.15 | 05/03/12 12:55 | calc |
| Sulfate | M300.0 - Ion Chromatography | 31.22 | | | mg/L | 0.5 | 2.5 | 04/24/12 22:44 | ccp |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK DN

ACZ Sample ID: ***L94083-05***
Date Sampled: *04/13/12 17:35*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

Metals Analysis

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Calcium, dissolved | M200.7 ICP | 66.7 | | | mg/L | 0.2 | 1 | 04/23/12 22:00 | aeb |
| Iron, dissolved | M200.7 ICP | 0.05 | | | mg/L | 0.02 | 0.05 | 04/23/12 22:00 | aeb |
| Magnesium, dissolved | M200.7 ICP | 24.7 | | | mg/L | 0.2 | 1 | 04/23/12 22:00 | aeb |
| Manganese, dissolved | M200.7 ICP | 0.107 | | | mg/L | 0.005 | 0.03 | 04/23/12 22:00 | aeb |
| Potassium, dissolved | M200.7 ICP | 3.6 | | | mg/L | 0.3 | 2 | 04/23/12 22:00 | aeb |
| Selenium, dissolved | M200.8 ICP-MS | 0.0007 | | | mg/L | 0.0001 | 0.0003 | 04/28/12 1:44 | pmc |
| Sodium, dissolved | M200.7 ICP | 29.5 | | | mg/L | 0.3 | 2 | 04/23/12 22:00 | aeb |

Wet Chemistry

| Parameter | EPA Method | Result | Qual | XQ | Units | MDL | PQL | Date | Analyst |
|---|---|---|---|---|---|---|---|---|---|
| Alkalinity as CaCO3 | SM2320B - Titration | | | | | | | | |
| Bicarbonate as CaCO3 | | 196 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Carbonate as CaCO3 | | 12 | B | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Hydroxide as CaCO3 | | | U | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Total Alkalinity | | 208 | | | mg/L | 2 | 20 | 04/18/12 0:00 | mla |
| Bromide | M300.0 - Ion Chromatography | | U | * | mg/L | 0.01 | 0.05 | 04/24/12 23:27 | ccp |
| Chloride | M300.0 - Ion Chromatography | 3.93 | | * | mg/L | 0.5 | 2.5 | 04/24/12 23:27 | ccp |
| Conductivity @25C | SM2510B | 629 | | | umhos/cm | 1 | 10 | 04/18/12 1:51 | mla |
| Fluoride | M300.0 - Ion Chromatography | 0.66 | | * | mg/L | 0.1 | 0.5 | 04/24/12 23:27 | ccp |
| Lab Filtration (0.45um) & Acidification | M200.7/200.8 | | | | | | | 04/19/12 15:57 | mfm |
| Lab Filtration (glass fiber filter) | SOPWC050 | | | | | | | 04/18/12 11:48 | abm |
| Nitrate as N, dissolved | Calculation: NO3NO2 minus NO2 | | UH | | mg/L | 0.02 | 0.1 | 05/03/12 12:55 | calc |
| Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.02 | 0.1 | 04/17/12 20:16 | pjb |
| Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 20:16 | pjb |
| pH (lab) | SM4500H+ B | | | | | | | | |
| pH | | 8.5 | H | | units | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| pH measured at | | 19.0 | | | C | 0.1 | 0.1 | 04/18/12 0:00 | mla |
| Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | | UH | * | mg/L | 0.01 | 0.05 | 04/17/12 22:32 | pjb |
| Residue, Filterable (TDS) @180C | SM2540C | 400 | | | mg/L | 10 | 20 | 04/17/12 14:42 | las |
| Sodium Absorption Ratio in Water | USGS - I1738-78 | 0.79 | | | | 0.03 | 0.15 | 05/03/12 12:55 | calc |
| Sulfate | M300.0 - Ion Chromatography | 111.90 | | | mg/L | 1 | 5 | 04/25/12 13:24 | ccp |

## Report Header Explanations

| | |
|---|---|
| *Batch* | A distinct set of samples analyzed at a specific time |
| *Found* | Value of the QC Type of interest |
| *Limit* | Upper limit for RPD, in %. |
| *Lower* | Lower Recovery Limit, in % (except for LCSS, mg/Kg) |
| *MDL* | Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations. |
| *PCN/SCN* | A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis |
| *PQL* | Practical Quantitation Limit, typically 5 times the MDL. |
| *QC* | True Value of the Control Sample or the amount added to the Spike |
| *Rec* | Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg) |
| *RPD* | Relative Percent Difference, calculation used for Duplicate QC Types |
| *Upper* | Upper Recovery Limit, in % (except for LCSS, mg/Kg) |
| *Sample* | Value of the Sample of interest |

## QC Sample Types

| | | | |
|---|---|---|---|
| *AS* | Analytical Spike (Post Digestion) | *LCSWD* | Laboratory Control Sample - Water Duplicate |
| *ASD* | Analytical Spike (Post Digestion) Duplicate | *LFB* | Laboratory Fortified Blank |
| *CCB* | Continuing Calibration Blank | *LFM* | Laboratory Fortified Matrix |
| *CCV* | Continuing Calibration Verification standard | *LFMD* | Laboratory Fortified Matrix Duplicate |
| *DUP* | Sample Duplicate | *LRB* | Laboratory Reagent Blank |
| *ICB* | Initial Calibration Blank | *MS* | Matrix Spike |
| *ICV* | Initial Calibration Verification standard | *MSD* | Matrix Spike Duplicate |
| *ICSAB* | Inter-element Correction Standard - A plus B solutions | *PBS* | Prep Blank - Soil |
| *LCSS* | Laboratory Control Sample - Soil | *PBW* | Prep Blank - Water |
| *LCSSD* | Laboratory Control Sample - Soil Duplicate | *PQV* | Practical Quantitation Verification standard |
| *LCSW* | Laboratory Control Sample - Water | *SDL* | Serial Dilution |

## QC Sample Type Explanations

| | |
|---|---|
| Blanks | Verifies that there is no or minimal contamination in the prep method or calibration procedure. |
| Control Samples | Verifies the accuracy of the method, including the prep procedure. |
| Duplicates | Verifies the precision of the instrument and/or method. |
| Spikes/Fortified Matrix | Determines sample matrix interferences, if any. |
| Standard | Verifies the validity of the calibration. |

## ACZ Qualifiers (Qual)

| | |
|---|---|
| B | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| H | Analysis exceeded method hold time. pH is a field test with an immediate hold time. |
| L | Target analyte response was below the laboratory defined negative threshold. |
| U | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |

## Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(5) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998).

## Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

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# Inorganic Extended Qualifier Report

**Lone Pine Gas, Inc.** ACZ Project ID: ***L94083***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L94083-01** | WG321731 | Selenium, dissolved | M200.8 ICP-MS | BE | Target analyte in continuing calibration blank (CCB) at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL]. |
| | WG321455 | Bromide | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Chloride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Fluoride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321237 | Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321243 | Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | H3 | Sample was received and analyzed past holding time. |
| **L94083-02** | WG321455 | Bromide | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Chloride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Fluoride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321237 | Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321243 | Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | H3 | Sample was received and analyzed past holding time. |

**Lone Pine Gas, Inc.** ACZ Project ID: ***L94083***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L94083-03** | WG321455 | Bromide | M300.0 - Ion Chromatography | DC | Sample required dilution. Non-target analyte exceeded calibration range. |
| | | | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | | M300.0 - Ion Chromatography | ZV | Sulfate and Bromide peaks not resolved in chromatogram due to high Sulfate concentration. |
| | | Chloride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Fluoride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321237 | Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321243 | Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | H3 | Sample was received and analyzed past holding time. |
| **L94083-04** | WG321455 | Bromide | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Chloride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Fluoride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321237 | Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321243 | Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | H3 | Sample was received and analyzed past holding time. |
| | | | M365.1 - Automated Ascorbic Acid | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |

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# Inorganic Extended Qualifier Report

**Lone Pine Gas, Inc.**

ACZ Project ID: ***L94083***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L94083-05** | WG321455 | Bromide | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Chloride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Fluoride | M300.0 - Ion Chromatography | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321237 | Nitrate/Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | Nitrite as N, dissolved | M353.2 - Automated Cadmium Reduction | H3 | Sample was received and analyzed past holding time. |
| | | | M353.2 - Automated Cadmium Reduction | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321243 | Phosphorus, ortho dissolved | M365.1 - Automated Ascorbic Acid | H3 | Sample was received and analyzed past holding time. |
| | | | M365.1 - Automated Ascorbic Acid | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: POND 5

ACZ Sample ID: ***L94083-01***
Date Sampled: *04/13/12 15:25*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5030C**

**Workgroup: WG321774**
Analyst: pml
Extract Date: 04/27/12 12:31
Analysis Date: 04/27/12 12:31

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 1 | * | ug/L | 0.2 | 1 |
| Ethylbenzene | 100-41-4 | | U | 1 | * | ug/L | 0.2 | 1 |
| m p Xylene | 1330-20-7 | | U | 1 | * | ug/L | 0.4 | 2 |
| o Xylene | 95-47- 6 | | U | 1 | * | ug/L | 0.2 | 1 |
| Toluene | 108-88-3 | | U | 1 | * | ug/L | 0.2 | 1 |
| TVH C6 to C10 | TVH | | U | 1 | * | mg/L | 0.05 | 0.05 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 106.8 | | 1 | * | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 107.6 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: POND 5

ACZ Sample ID: ***L94083-01***
Date Sampled: *04/13/12 15:25*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

**Workgroup: WG321453**
Analyst: gk
Extract Date: 04/18/12 12:07
Analysis Date: 04/23/12 15:05

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | 1.1 | | 1 | * | mg/L | 0.1 | 0.5 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 48.5 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH UP

ACZ Sample ID: ***L94083-02***
Date Sampled: *04/13/12 16:00*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5030C**

**Workgroup: WG321774**
Analyst: pml
Extract Date: 04/27/12 13:48
Analysis Date: 04/27/12 13:48

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 1 | * | ug/L | 0.2 | 1 |
| Ethylbenzene | 100-41-4 | | U | 1 | * | ug/L | 0.2 | 1 |
| m p Xylene | 1330-20-7 | | U | 1 | * | ug/L | 0.4 | 2 |
| o Xylene | 95-47- 6 | | U | 1 | * | ug/L | 0.2 | 1 |
| Toluene | 108-88-3 | | U | 1 | * | ug/L | 0.2 | 1 |
| TVH C6 to C10 | TVH | | U | 1 | * | mg/L | 0.05 | 0.05 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 106.9 | | 1 | * | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 107.7 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH UP

ACZ Sample ID: ***L94083-02***
Date Sampled: *04/13/12 16:00*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

**Workgroup: WG321453**
Analyst: gk
Extract Date: 04/18/12 12:08
Analysis Date: 04/23/12 15:31

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | | U | 1.02 | * | mg/L | 0.1 | 0.5 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 77.3 | | 1.02 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK UP

ACZ Sample ID: ***L94083-03***
Date Sampled: *04/13/12 16:45*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5030C**

**Workgroup: WG321774**
Analyst: pml
Extract Date: 04/27/12 15:05
Analysis Date: 04/27/12 15:05

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 1 | * | ug/L | 0.2 | 1 |
| Ethylbenzene | 100-41-4 | | U | 1 | * | ug/L | 0.2 | 1 |
| m p Xylene | 1330-20-7 | | U | 1 | * | ug/L | 0.4 | 2 |
| o Xylene | 95-47- 6 | | U | 1 | * | ug/L | 0.2 | 1 |
| Toluene | 108-88-3 | | U | 1 | * | ug/L | 0.2 | 1 |
| TVH C6 to C10 | TVH | | U | 1 | * | mg/L | 0.05 | 0.05 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 107.3 | | 1 | * | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 109.8 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK UP

ACZ Sample ID: ***L94083-03***
Date Sampled: *04/13/12 16:45*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

**Workgroup: WG321453**
Analyst: gk
Extract Date: 04/18/12 12:09
Analysis Date: 04/23/12 15:57

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | | U | 1.02 | * | mg/L | 0.1 | 0.5 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 71.8 | | 1.02 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH DN

ACZ Sample ID: ***L94083-04***
Date Sampled: *04/13/12 17:15*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5030C**

**Workgroup: WG321774**
Analyst: pml
Extract Date: 04/27/12 15:42
Analysis Date: 04/27/12 15:42

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 1 | * | ug/L | 0.2 | 1 |
| Ethylbenzene | 100-41-4 | | U | 1 | * | ug/L | 0.2 | 1 |
| m p Xylene | 1330-20-7 | | U | 1 | * | ug/L | 0.4 | 2 |
| o Xylene | 95-47- 6 | | U | 1 | * | ug/L | 0.2 | 1 |
| Toluene | 108-88-3 | | U | 1 | * | ug/L | 0.2 | 1 |
| TVH C6 to C10 | TVH | | U | 1 | * | mg/L | 0.05 | 0.05 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 103.8 | | 1 | * | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 107.9 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: SPRING GULCH DN

ACZ Sample ID: ***L94083-04***
Date Sampled: *04/13/12 17:15*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

**Workgroup: WG321453**
Analyst: gk
Extract Date: 04/18/12 12:10
Analysis Date: 04/23/12 16:24

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | .2 | J | 1.03 | * | mg/L | 0.1 | 0.5 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 84.4 | | 1.03 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK DN

ACZ Sample ID: ***L94083-05***
Date Sampled: *04/13/12 17:35*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5030C**

**Workgroup: WG321774**
Analyst: pml
Extract Date: 04/27/12 16:20
Analysis Date: 04/27/12 16:20

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| Benzene | 71-43-2 | | U | 1 | * | ug/L | 0.2 | 1 |
| Ethylbenzene | 100-41-4 | | U | 1 | * | ug/L | 0.2 | 1 |
| m p Xylene | 1330-20-7 | | U | 1 | * | ug/L | 0.4 | 2 |
| o Xylene | 95-47- 6 | | U | 1 | * | ug/L | 0.2 | 1 |
| Toluene | 108-88-3 | | U | 1 | * | ug/L | 0.2 | 1 |
| TVH C6 to C10 | TVH | | U | 1 | * | mg/L | 0.05 | 0.05 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| Bromofluorobenzene | 460-00-4 | 107.3 | | 1 | * | % | 70 | 130 |
| Bromofluorobenzene (TVH) | 460-00 4 | 107.1 | | 1 | * | % | 70 | 130 |

**Lone Pine Gas, Inc.**
Project ID: LONE PINE GAS
Sample ID: HELL CREEK DN

ACZ Sample ID: ***L94083-05***
Date Sampled: *04/13/12 17:35*
Date Received: *04/17/12*
Sample Matrix: *Ground Water*

## Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3520**

**Workgroup: WG321453**
Analyst: gk
Extract Date: 04/18/12 12:11
Analysis Date: 04/23/12 16:50

| Compound | CAS | Result | QUAL | Dilution | XQ | Units | MDL | PQL |
|---|---|---|---|---|---|---|---|---|
| TPH C10 to C28 | | .1 | J | 1.02 | * | mg/L | 0.1 | 0.5 |
| **Surrogate Recoveries** | **CAS** | **% Recovery** | | **Dilution** | **XQ** | **Units** | **LCL** | **UCL** |
| OTP | 84-15-1 | 83.4 | | 1.02 | * | % | 70 | 130 |

## Report Header Explanations

| | |
|---|---|
| *Batch* | A distinct set of samples analyzed at a specific time |
| *Found* | Value of the QC Type of interest |
| *Limit* | Upper limit for RPD, in %. |
| *Lower* | Lower Recovery Limit, in % (except for LCSS, mg/Kg) |
| *LCL* | Lower Control Limit |
| *MDL* | Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations. |
| *PCN/SCN* | A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis |
| *PQL* | Practical Quantitation Limit, typically 5 times the MDL. |
| *QC* | True Value of the Control Sample or the amount added to the Spike |
| *Rec* | Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg) |
| *RPD* | Relative Percent Difference, calculation used for Duplicate QC Types |
| *Upper* | Upper Recovery Limit, in % (except for LCSS, mg/Kg) |
| *UCL* | Upper Control Limit |
| *Sample* | Value of the Sample of interest |

## QC Sample Types

| | | | |
|---|---|---|---|
| *SURR* | Surrogate | *LFM* | Laboratory Fortified Matrix |
| *INTS* | Internal Standard | *LFMD* | Laboratory Fortified Matrix Duplicate |
| *DUP* | Sample Duplicate | *LRB* | Laboratory Reagent Blank |
| *LCSS* | Laboratory Control Sample - Soil | *MS/MSD* | Matrix Spike/Matrix Spike Duplicate |
| *LCSW* | Laboratory Control Sample - Water | *PBS* | Prep Blank - Soil |
| *LFB* | Laboratory Fortified Blank | *PBW* | Prep Blank - Water |

## QC Sample Type Explanations

| | |
|---|---|
| Blanks | Verifies that there is no or minimal contamination in the prep method or calibration procedure. |
| Control Samples | Verifies the accuracy of the method, including the prep procedure. |
| Duplicates | Verifies the precision of the instrument and/or method. |
| Spikes/Fortified Matrix | Determines sample matrix interferences, if any. |

## ACZ Qualifiers (Qual)

| | |
|---|---|
| B | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| E | Analyte concentration is estimated due to result exceeding calibration range. |
| H | Analysis exceeded method hold time. pH is a field test with an immediate hold time. |
| J | Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity. |
| L | Target analyte response was below the laboratory defined negative threshold. |
| M | Poor spike recovery is accepted because sample concentration is four times greater than spike concentration. |
| P | Analyte concentration differs from second detector by more than 40%. |
| R | Poor spike recovery accepted because the other spike in the set fell within the given limits. |
| T | High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL. |
| U | The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit. |
| V | High blank data accepted because sample concentration is 10 times higher than blank concentration. |
| X | Quality control sample is out of control. |
| Z | Poor spike recovery is accepted because sample concentration is four times greater than spike concentration. |

## Method References


| | |
|---|---|
| (1) | EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983. |
| (2) | EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990. |
| (3) | EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990. |
| (4) | EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996. |
| (5) | Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995 & 20th edition (1998). |


## Comments

| | |
|---|---|
| (1) | QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations. |
| (2) | Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis. |
| (3) | An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result. |

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

**Lone Pine Gas, Inc.** ACZ Project ID: ***L94083***

| ACZ ID | WORKNUM | PARAMETER | METHOD | QUAL | DESCRIPTION |
|---|---|---|---|---|---|
| **L94083-01** | WG321774 | *All Compounds* | M8021B/8015D GC/PID/FID | QB | Method-specified preservation criteria cannot be met due to sample matrix. |
| | | | M8021B/8015D GC/PID/FID | QO | The sample vial used for the batch spike QC was received and analyzed with inadequate chemical preservation. |
| | | | M8021B/8015D GC/PID/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321453 | | M8015D GC/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | OTP | M8015D GC/FID | S13 | Surrogate recovery was below laboratory and method acceptance limits. See Case Narrative. |
| | | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| **L94083-02** | WG321774 | *All Compounds* | M8021B/8015D GC/PID/FID | QO | The sample vial used for the batch spike QC was received and analyzed with inadequate chemical preservation. |
| | | | M8021B/8015D GC/PID/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321453 | | M8015D GC/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| **L94083-03** | WG321774 | *All Compounds* | M8021B/8015D GC/PID/FID | QO | The sample vial used for the batch spike QC was received and analyzed with inadequate chemical preservation. |
| | | | M8021B/8015D GC/PID/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321453 | | M8015D GC/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| **L94083-04** | WG321774 | *All Compounds* | M8021B/8015D GC/PID/FID | QO | The sample vial used for the batch spike QC was received and analyzed with inadequate chemical preservation. |
| | | | M8021B/8015D GC/PID/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321453 | | M8015D GC/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |
| **L94083-05** | WG321774 | *All Compounds* | M8021B/8015D GC/PID/FID | QO | The sample vial used for the batch spike QC was received and analyzed with inadequate chemical preservation. |
| | | | M8021B/8015D GC/PID/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | WG321453 | | M8015D GC/FID | RA | Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL). |
| | | TPH C10 to C28 | M8015D GC/FID | M2 | Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable. |

# Certification Qualifiers

**Lone Pine Gas, Inc.** ACZ Project ID: ***L94083***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

# Sample Receipt

**Lone Pine Gas, Inc.**
LONE PINE GAS

ACZ Project ID: L94083
Date Received: 04/17/2012 09:08
Received By: ksj
Date Printed: 4/18/2012

## Receipt Verification

| | YES | NO | NA |
|---|---|---|---|
| 1) Does this project require special handling procedures such as CLP protocol? | | | X |
| 2) Are the custody seals on the cooler intact? | | | X |
| 3) Are the custody seals on the sample containers intact? | | | X |
| 4) Is there a Chain of Custody or other directive shipping papers present? | X | | |
| 5) Is the Chain of Custody complete? | X | | |
| 6) Is the Chain of Custody in agreement with the samples received? | X | | |
| 7) Is there enough sample for all requested analyses? | X | | |
| 8) Are all samples within holding times for requested analyses? | | X | |
| 9) Were all sample containers received intact? | X | | |
| 10) Are the temperature blanks present? | | | X |
| 11) Is the trip blank for Cyanide present? | | | X |
| 12) Is the trip blank for VOA present? | | X | |
| 13) Are samples requiring no headspace, headspace free? | X | | |
| 14) Do the samples that require a Foreign Soils Permit have one? | | | X |

## Exceptions: If you answered no to any of the above questions, please describe

Some parameters were received past hold time.

## Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

## Shipping Containers

| Cooler Id | Temp (°C) | Rad (µR/hr) |
|---|---|---|
| 3775 | 1.2 | 14 |
| | | |
| | | |
| | | |

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

## Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

# Sample Receipt

**Lone Pine Gas, Inc.**
LONE PINE GAS

ACZ Project ID: L94083
Date Received: 04/17/2012 09:08
Received By: ksj
Date Printed: 4/18/2012

## Sample Container Preservation

| SAMPLE | CLIENT ID | R < 2 | G < 2 | BK < 2 | Y< 2 | YG< 2 | B< 2 | O < 2 | T >12 | N/A | RAD | ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L94083-01 | POND 5 | | | | | | | | | X | | |
| L94083-02 | SPRING GULCH UP | | | | | | | | | X | | |
| L94083-03 | HELL CREEK UP | | | | | | | | | X | | |
| L94083-04 | SPRING GULCH DN | | | | | | | | | X | | |
| L94083-05 | HELL CREEK DN | | | | | | | | | X | | |

## Sample Container Preservation Legend

| Abbreviation | Description | Container Type | Preservative/Limits |
|---|---|---|---|
| R | Raw/Nitric | RED | pH must be < 2 |
| B | Filtered/Sulfuric | BLUE | pH must be < 2 |
| BK | Filtered/Nitric | BLACK | pH must be < 2 |
| G | Filtered/Nitric | GREEN | pH must be < 2 |
| O | Raw/Hydrochloric | ORANGE | pH must be < 2 |
| P | Raw/NaOH | PURPLE | pH must be > 12 * |
| T | Raw/NaOH Zinc Acetate | TAN | pH must be > 12 |
| Y | Raw/Sulfuric | YELLOW | pH must be < 2 |
| YG | Raw/Sulfuric | YELLOW GLASS | pH must be < 2 |
| N/A | No preservative needed | Not applicable | |
| RAD | Gamma/Beta dose rate | Not applicable | must be < 250 µR/hr |

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

# ACZ Laboratories, Inc. L94083

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

## CHAIN of CUSTODY

| | |
|---|---|
| Name: Steven Shute | Address: 4505 S. Broadway |
| Company: Long Pine Gas Inc. | Englewood, CO 80113 |
| E-mail: pipeline@rof.net | Telephone: 970-928-9208 |

| | |
|---|---|
| Name: Randy Miller | E-mail: randy@npeng.com |
| Company: North Park Engineering | Telephone: 970-218-4974 |

| | |
|---|---|
| Name: Steven Shute | Address: 4505 S. Broadway |
| Company: Long Pine Gas Inc | Englewood CO 80113 |
| E-mail: pipeline@rof.net | Telephone: 970-928-9208 |

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: R Miller Sampler's site Information State CO Zip code 81484 Time Zone MT

Quote #: GW-910-1

Project/PO #: Long Pine

Reporting state for compliance testing:

Check box if samples include NRC licensed material? [ ]

| Sample ID | Date/Time | Matrix | # of Containers | Cond | GW-910-1 | SO-910-1 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pond S | 4/13/12 15:25 | GW | 7 | | X | | | | | | |
| Spring Gulch UP | 4/13/12 16:00 | GW | 7 | | X | | | | | | |
| Hell Creek UP | 4/13/12 16:45 | GW | 7 | | X | | | | | | |
| Spring Gulch DN | 4/13/12 17:15 | GW | 7 | | X | | | | | | |
| Hell Creek DN | 4/13/12 17:35 | GW | 7 | | X | | | | | | |
| Timberman | 4/13/12 18:00 | SO | 2 | | | X | | | | | |
| Dumler 1 | 4/13/12 18:30 | SO | 2 | | | X | | | | | |
| Dumler 2 | 4/13/12 18:40 | SO | 2 | | | X | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Do not analyze PAH on SO-910-1 (3 soil samples)
Soil samples are in separate cooler.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

| Relinquished By | Date/Time | Received By | Date/Time |
|---|---|---|---|
| Randall A. Miller | 4/16/12 14:00 | ALK | 4/17/12 0908 |
| | | | |

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

L94083 Chain of Custody