

8/27/15

Mr. Craig Snyder  
Mr. Mitch Little  
Hellman & Associates  
11913 W Interstate 70 Frontage Rd N  
Wheat Ridge, CO 80033

**H2S Analysis by GC-FPD**

Dear Mr. Little & Mr. Snyder,

APT Laboratory Services was delivered seven gas phase samples in foil lined Tedlar bags on August 21, 2015. An H2S analysis was performed by APT on August 21, 2015, utilizing a modified ASTM Method D5504. A three-point calibration was performed on a HP 5890 gas chromatograph equipped with a flame photometric detector. Samples were analyzed in triplicate for hydrogen sulfide and a post calibration check was performed to show the stability of the instrument. All calibrations and sample results are enclosed. A summary of the results is shown below.

| Hellman & Associates – H2S by GC-FPD, August 21, 2015 |                 |
|---|-----------------|
| Sample  | H2S Conc. (ppm) |
| RZ081815-01   | 27.7            |
| CH081815-02   | 24.3            |
| RZ081915-01   | 26.6            |
| RZ081915-02   | 29.0            |
| RZ081915-03   | 20.1            |
| RZ081915-04   | 26.4            |
| RZ081915-05   | 19.4            |

*Modified ASTM D5504 Results*

We look forward to being of service to Hellman & Associates in the future. Please call me with any questions or comments at (303) 420-5949 or (800) 268-6213.

Regards,



Daniel Williams  
Asst Director of Laboratory Services

APT Project: LWTO5104

DENVER OFFICE  
5530 Marshall Street  
Arvada, CO 80002  
(303) 420-5949  
FAX (303) 420-5920  
(800) 268-6213



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8/21/2015

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| Initial Three-Point Calibration |             |        |          |        |          |        |          |         |        |     |
|---------------------------------|-------------|--------|----------|--------|----------|--------|----------|---------|--------|-----|
| Low Level Calibration Standard  |             |        |          |        |          |        |          |         |        |     |
| Cpd ID                          | Conc. (ppm) | Inj. 1 |          | Inj. 2 |          | Inj. 3 |          | Average |        | OK? |
|                                 |             | RT     | AC       | RT     | AC       | RT     | AC       | RT      | AC     |     |
| Hydrogen Sulfide                | 12.55       | 1.927  | 12003.5  | 1.932  | 11558.7  | 1.93   | 11995.2  | 1.930   | 11852  | Y   |
| Mid Level Calibration Standard  |             |        |          |        |          |        |          |         |        |     |
| Cpd ID                          | Conc. (ppm) | Inj. 1 |          | Inj. 2 |          | Inj. 3 |          | Average |        | OK? |
|                                 |             | RT     | AC       | RT     | AC       | RT     | AC       | RT      | AC     |     |
| Hydrogen Sulfide                | 50.20       | 1.928  | 124567.6 | 1.93   | 117193.3 | 1.931  | 123388.3 | 1.930   | 121716 | Y   |
| High Level Calibration Standard |             |        |          |        |          |        |          |         |        |     |
| Cpd ID                          | Conc. (ppm) | Inj. 1 |          | Inj. 2 |          | Inj. 3 |          | Average |        | OK? |
|                                 |             | RT     | AC       | RT     | AC       | RT     | AC       | RT      | AC     |     |
| Hydrogen Sulfide                | 125.50      | 1.926  | 504179.2 | 1.93   | 507292.1 | 1.925  | 500150.7 | 1.927   | 503874 | Y   |

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8/21/2015

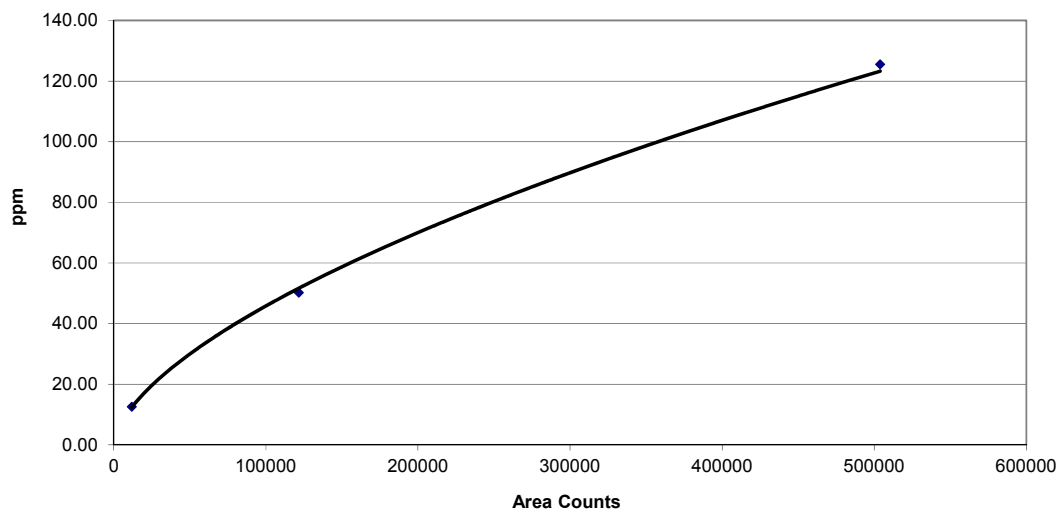
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Power Regression Calculations

$$\text{conc} = A \cdot \text{area}^B$$

| Hydrogen Sulfide |            |                             |          |          |                |
|------------------|------------|-----------------------------|----------|----------|----------------|
| Certified ppm    | Average AC | Power Regression Statistics |          |          | ppm from curve |
|                  |            | R <sup>2</sup>              | A        | B        |                |
| 12.55            | 11852      | 0.9995                      | 0.039804 | 0.612201 | 12.41          |
| 50.20            | 121716     |                             |          |          | 51.66          |
| 125.50           | 503874     |                             |          |          | 123.28         |

## Hydrogen Sulfide



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8/21/2015

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| Sample Analysis  |        |         |        |         |        |         |         |       |         |
|------------------|--------|---------|--------|---------|--------|---------|---------|-------|---------|
| RZ081815-01      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.922  | 46336.3 | 1.92   | 42494.3 | 1.92   | 43041.1 | 1.921   | 43957 | Y 27.69 |
| CH081815-02      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.919  | 33697.5 | 1.921  | 36956.4 | 1.923  | 36041   | 1.921   | 35565 | Y 24.33 |
| RZ081915-01      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.919  | 42471.9 | 1.922  | 40880.8 | 1.919  | 40101.9 | 1.920   | 41152 | Y 26.60 |
| RZ081915-02      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.920  | 49752.5 | 1.922  | 45913   | 1.919  | 46379.7 | 1.920   | 47348 | Y 28.98 |
| RZ081915-03      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.918  | 26046.7 | 1.918  | 26814.4 | 1.919  | 25426.3 | 1.918   | 26096 | Y 20.13 |
| RZ081915-04      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.920  | 41371   | 1.921  | 41512.4 | 1.919  | 38972.3 | 1.920   | 40619 | Y 26.39 |
| RZ081915-05      |        |         |        |         |        |         |         |       |         |
| Cpd ID           | Inj. 1 |         | Inj. 2 |         | Inj. 3 |         | Average |       |         |
|                  | RT     | AC      | RT     | AC      | RT     | AC      | RT      | AC    | OK? ppm |
| Hydrogen Sulfide | 1.918  | 25194.8 | 1.917  | 24390.7 | 1.92   | 23930.9 | 1.918   | 24505 | Y 19.37 |



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| Quality Assurance  |                |        |          |        |          |        |          |         |        |       |                   |                 |              |
|--|----------------|--------|----------|--------|----------|--------|----------|---------|--------|-------|-------------------|-----------------|--------------|
| Recovery / Spike (mid-level calibration gas to the sample probe) |                |        |          |        |          |        |          |         |        |       |                   |                 |              |
| Cpd<br>ID  | Conc.<br>(ppm) | Inj. 1 |          | Inj. 2 |          | Inj. 3 |          | Average |        |       | Triplicate<br>OK? | Recovery<br>OK? | Audit<br>OK? |
|  |                | RT     | AC       | RT     | AC       | RT     | AC       | RT      | AC     | ppm   |                   |                 |              |
| Hydrogen Sulfide   | 50.20          | 1.919  | 116106.9 | 1.922  | 120649.1 | 1.919  | 127446.8 | 1.920   | 121401 | 51.58 | Y                 | Y               | Y            |

