



Project: Mesa County, CO  
 Site: Gunderson 29-09 Pad  
 Well: Piceance Federal 29-22E  
 Wellbore: Wellbore #1  
 Design: Design #2  
 Latitude: 39.248411  
 Longitude: -107.788286  
 Ground Level: 7531.0  
 well @ 7561.0usft (H&P #522)



**PROJECT DETAILS: Mesa County, CO**

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Central Zone  
 System Datum: Mean Sea Level

**REFERENCE INFORMATION**

Co-ordinate (N/E) Reference: Well Piceance Federal 29-22E, True North  
 Vertical (TVD) Reference: well @ 7561.0usft (H&P #522)  
 Section (VS) Reference: Slot - (0.0N, 0.0E)  
 Measured Depth Reference: well @ 7561.0usft (H&P #522)  
 Calculation Method: Minimum Curvature

**WELL DETAILS: Piceance Federal 29-22E**

| +N/-S | +E/-W | Northing   | Ground Level:<br>Easting | 7531.0<br>Latitude | Longitude   |
|-------|-------|------------|--------------------------|--------------------|-------------|
| 0.0   | 0.0   | 1523529.06 | 2362041.66               | 39.248411          | -107.788286 |

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)**

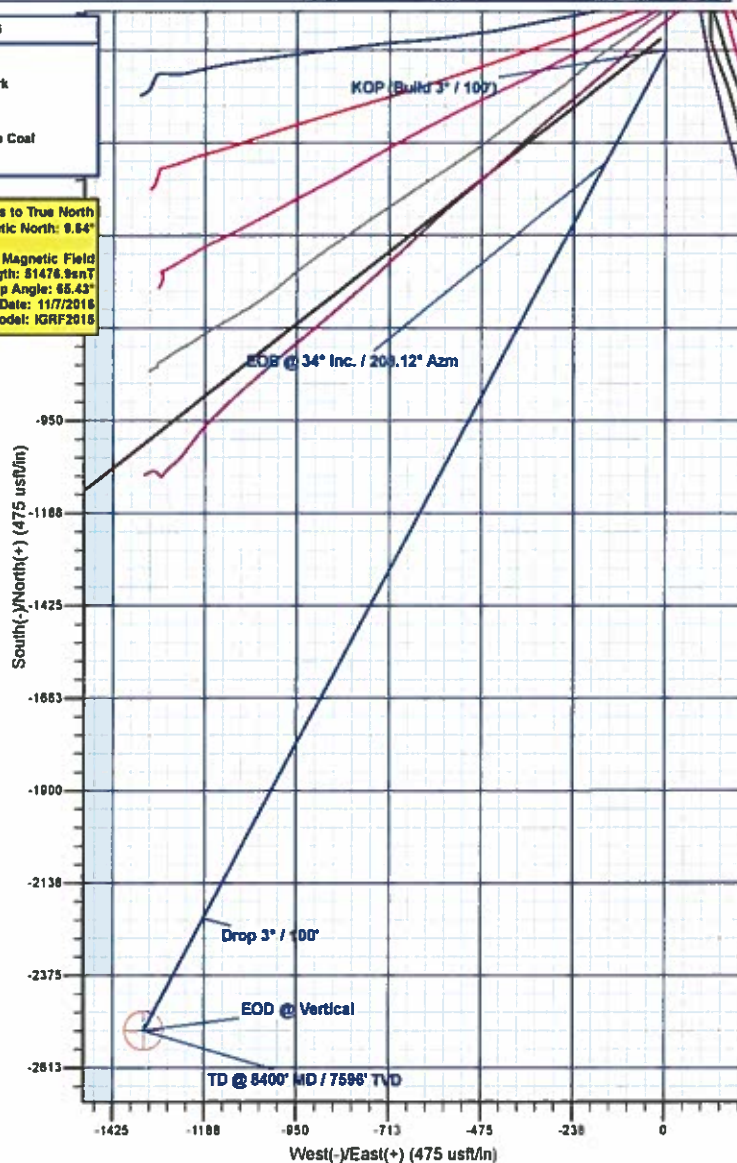
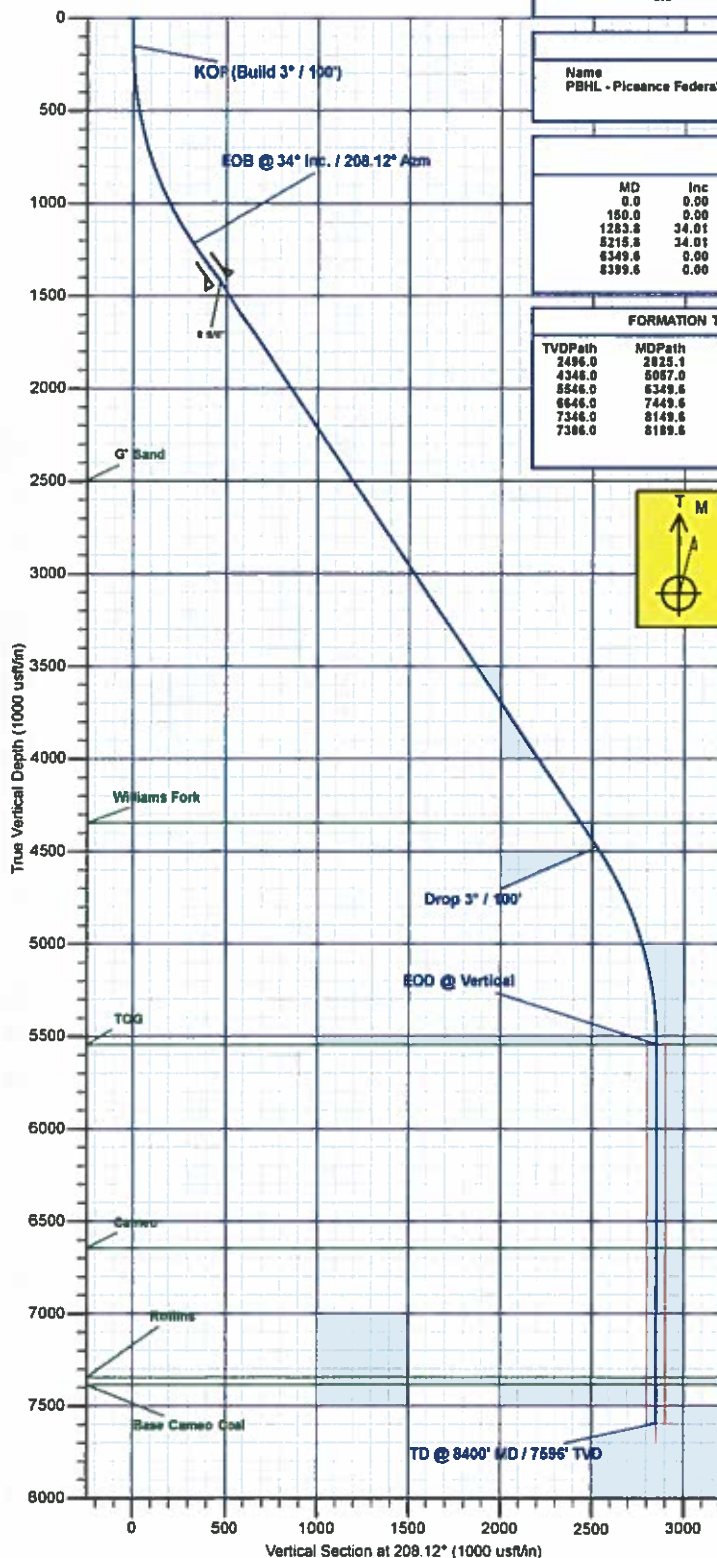
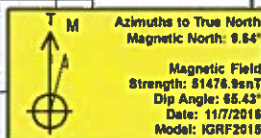
| Name                               | TVD    | +N/-S   | +E/-W   | Northing   | Easting    | Latitude  | Longitude   |
|------------------------------------|--------|---------|---------|------------|------------|-----------|-------------|
| PBHL - Piceance Federal 29-22E D#2 | 7596.0 | -2516.3 | -1344.7 | 1521047.41 | 2350634.64 | 39.241502 | -107.793034 |

**SECTION DETAILS**

| MD     | Inc   | Azi    | TVD    | +N/-S   | +E/-W   | Diag | TFace  | VSect  | Annotation                   |
|--------|-------|--------|--------|---------|---------|------|--------|--------|------------------------------|
| 0.0    | 0.00  | 0.00   | 0.0    | 0.0     | 0.0     | 0.00 | 0.00   | 0.0    | KOP (Build 3° / 100°)        |
| 150.0  | 0.00  | 0.00   | 150.0  | 0.0     | 0.0     | 0.00 | 0.00   | 0.0    | EOD @ 34° Inc. / 208.12° Azm |
| 1283.3 | 34.01 | 208.12 | 1283.4 | -288.2  | -164.0  | 3.00 | 288.12 | 326.8  | Drop 3° / 100°               |
| 5216.3 | 0.00  | 0.00   | 4477.6 | -2328.1 | -1190.7 | 0.00 | 0.00   | 2526.3 | EOD @ Vertical               |
| 6349.6 | 0.00  | 0.00   | 5546.0 | -3516.3 | -1344.7 | 3.00 | 180.00 | 2853.1 | TD @ 8400' MD / 7596' TVD    |
| 8399.6 | 0.00  | 0.00   | 7596.0 | -2516.3 | -1344.7 | 0.00 | 0.00   | 2853.1 |                              |

**FORMATION TOP DETAILS**

| TVDPath | MDPath | Formation       |
|---------|--------|-----------------|
| 2496.0  | 2825.1 | G' Sand         |
| 4348.0  | 5067.0 | Williams Fork   |
| 5548.0  | 6349.6 | TOG             |
| 6646.0  | 7449.6 | Cameo           |
| 7346.0  | 8149.6 | Rollins         |
| 7386.0  | 8199.6 | Base Cameo Coal |



Plan: Design #2 (Piceance Federal 29-22E/Wellbore #1)

Created By: Will Jircik Date: 13:39, January 11 2017



# **Laramie Energy, LLC**

**Mesa County, CO**

**Gunderson 29-09 Pad**

**Piceance Federal 29-22E**

**Wellbore #1**

**Plan: Design #2**

## **QES Well Planning Report**

**11 January, 2017**





## Well Planning Report



|                  |                         |                                     |                              |
|------------------|-------------------------|-------------------------------------|------------------------------|
| <b>Database:</b> | EDM5002                 | <b>Local Co-ordinate Reference:</b> | Well Piceance Federal 29-22E |
| <b>Company:</b>  | Laramie Energy, LLC     | <b>TVD Reference:</b>               | well @ 7561.0usft (H&P #522) |
| <b>Project:</b>  | Mesa County, CO         | <b>MD Reference:</b>                | well @ 7561.0usft (H&P #522) |
| <b>Site:</b>     | Gunderson 29-09 Pad     | <b>North Reference:</b>             | True                         |
| <b>Well:</b>     | Piceance Federal 29-22E | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Wellbore:</b> | Wellbore #1             |                                     |                              |
| <b>Design:</b>   | Design #2               |                                     |                              |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Mesa County, CO           |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | Colorado Central Zone     |                      |                |

|                              |                     |                     |                   |                                  |
|------------------------------|---------------------|---------------------|-------------------|----------------------------------|
| <b>Site</b>                  | Gunderson 29-09 Pad |                     |                   |                                  |
| <b>Site Position:</b>        |                     | <b>Northing:</b>    | 1,523,671.42 usft | <b>Latitude:</b> 39.248803       |
| <b>From:</b>                 | Lat/Long            | <b>Easting:</b>     | 2,352,063.75 usft | <b>Longitude:</b> -107.788221    |
| <b>Position Uncertainty:</b> | 0.0 usft            | <b>Slot Radius:</b> | 13-3/16 "         | <b>Grid Convergence:</b> -1.44 " |

|                             |                         |             |                            |                   |
|-----------------------------|-------------------------|-------------|----------------------------|-------------------|
| <b>Well</b>                 | Piceance Federal 29-22E |             |                            |                   |
| <b>Well Position</b>        | +N/-S                   | -142.9 usft | <b>Northing:</b>           | 1,523,529.07 usft |
|                             | +E/-W                   | -18.5 usft  | <b>Easting:</b>            | 2,352,041.67 usft |
| <b>Position Uncertainty</b> | 0.0 usft                |             | <b>Wellhead Elevation:</b> | 0.0 usft          |
|                             |                         |             | <b>Ground Level:</b>       | 7,531.0 usft      |

|                  |                   |                    |                            |                          |                                |
|------------------|-------------------|--------------------|----------------------------|--------------------------|--------------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                            |                          |                                |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination<br/>(°)</b> | <b>Dip Angle<br/>(°)</b> | <b>Field Strength<br/>(nT)</b> |
|                  | IGRF2015          | 11/7/2016          | 9.64                       | 65.43                    | 51,477                         |

|                          |                                    |                         |                         |                          |
|--------------------------|------------------------------------|-------------------------|-------------------------|--------------------------|
| <b>Design</b>            | Design #2                          |                         |                         |                          |
| <b>Audit Notes:</b>      |                                    |                         |                         |                          |
| <b>Version:</b>          | <b>Phase:</b>                      | PLAN                    | <b>Tie On Depth:</b>    | 0.0                      |
| <b>Vertical Section:</b> | <b>Depth From (TVD)<br/>(usft)</b> | <b>+N/-S<br/>(usft)</b> | <b>+E/-W<br/>(usft)</b> | <b>Direction<br/>(°)</b> |
|                          | 0.0                                | 0.0                     | 0.0                     | 208.12                   |

| <b>Plan Sections</b>        |                    |                |                             |                 |                 |                               |                              |                             |            |                     |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|------------------------------|-----------------------------|------------|---------------------|
| Measured<br>Depth<br>(usft) | Inclination<br>(°) | Azimuth<br>(°) | Vertical<br>Depth<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Dogleg<br>Rate<br>(°/100usft) | Build<br>Rate<br>(°/100usft) | Turn<br>Rate<br>(°/100usft) | TFO<br>(°) | Target              |
| 0.0                         | 0.00               | 0.00           | 0.0                         | 0.0             | 0.0             | 0.00                          | 0.00                         | 0.00                        | 0.00       |                     |
| 150.0                       | 0.00               | 0.00           | 150.0                       | 0.0             | 0.0             | 0.00                          | 0.00                         | 0.00                        | 0.00       |                     |
| 1,283.8                     | 34.01              | 208.12         | 1,218.4                     | -288.2          | -154.0          | 3.00                          | 3.00                         | 0.00                        | 208.12     |                     |
| 5,215.8                     | 34.01              | 208.12         | 4,477.6                     | -2,228.1        | -1,190.7        | 0.00                          | 0.00                         | 0.00                        | 0.00       |                     |
| 6,349.6                     | 0.00               | 0.00           | 5,546.0                     | -2,516.3        | -1,344.7        | 3.00                          | -3.00                        | 0.00                        | 180.00     |                     |
| 8,399.6                     | 0.00               | 0.00           | 7,596.0                     | -2,516.3        | -1,344.7        | 0.00                          | 0.00                         | 0.00                        | 0.00       | PBHL - Piceance Fed |





## Well Planning Report



|                  |                         |                                     |                              |
|------------------|-------------------------|-------------------------------------|------------------------------|
| <b>Database:</b> | EDM5002                 | <b>Local Co-ordinate Reference:</b> | Well Piceance Federal 29-22E |
| <b>Company:</b>  | Laramie Energy, LLC     | <b>TVD Reference:</b>               | well @ 7561 0usft (H&P #522) |
| <b>Project:</b>  | Mesa County, CO         | <b>MD Reference:</b>                | well @ 7561 0usft (H&P #522) |
| <b>Site:</b>     | Gunderson 29-09 Pad     | <b>North Reference:</b>             | True                         |
| <b>Well:</b>     | Piceance Federal 29-22E | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Wellbore:</b> | Wellbore #1             |                                     |                              |
| <b>Design:</b>   | Design #2               |                                     |                              |

## Planned Survey

| Measured Depth (usft)               | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Buid Rate (°/100usft) | Turn Rate (°/100usft) |
|-------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|-----------------------|-----------------------|
| 0.0                                 | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                  | 0.00                  |
| 100.0                               | 0.00            | 0.00        | 100.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                  | 0.00                  |
| <b>KOP (Build 3° / 100')</b>        |                 |             |                       |              |              |                         |                         |                       |                       |
| 150.0                               | 0.00            | 0.00        | 150.0                 | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                  | 0.00                  |
| 200.0                               | 1.50            | 208.12      | 200.0                 | -0.6         | -0.3         | 0.7                     | 3.00                    | 3.00                  | 0.00                  |
| 300.0                               | 4.50            | 208.12      | 299.8                 | -5.2         | -2.8         | 5.9                     | 3.00                    | 3.00                  | 0.00                  |
| 400.0                               | 7.50            | 208.12      | 399.3                 | -14.4        | -7.7         | 16.3                    | 3.00                    | 3.00                  | 0.00                  |
| 500.0                               | 10.50           | 208.12      | 498.0                 | -28.2        | -15.1        | 32.0                    | 3.00                    | 3.00                  | 0.00                  |
| 600.0                               | 13.50           | 208.12      | 595.8                 | -46.5        | -24.9        | 52.8                    | 3.00                    | 3.00                  | 0.00                  |
| 700.0                               | 16.50           | 208.12      | 692.4                 | -69.4        | -37.1        | 78.6                    | 3.00                    | 3.00                  | 0.00                  |
| 800.0                               | 19.50           | 208.12      | 787.5                 | -96.6        | -51.6        | 109.5                   | 3.00                    | 3.00                  | 0.00                  |
| 900.0                               | 22.50           | 208.12      | 880.9                 | -128.2       | -68.5        | 145.4                   | 3.00                    | 3.00                  | 0.00                  |
| 1,000.0                             | 25.50           | 208.12      | 972.2                 | -164.1       | -87.7        | 186.0                   | 3.00                    | 3.00                  | 0.00                  |
| 1,100.0                             | 28.50           | 208.12      | 1,061.3               | -204.1       | -109.1       | 231.4                   | 3.00                    | 3.00                  | 0.00                  |
| 1,200.0                             | 31.50           | 208.12      | 1,147.9               | -248.2       | -132.6       | 281.4                   | 3.00                    | 3.00                  | 0.00                  |
| <b>EOB @ 34° Inc. / 208.12° Azm</b> |                 |             |                       |              |              |                         |                         |                       |                       |
| 1,283.8                             | 34.01           | 208.12      | 1,218.4               | -288.2       | -154.0       | 326.8                   | 3.00                    | 3.00                  | 0.00                  |
| 1,300.0                             | 34.01           | 208.12      | 1,231.8               | -296.2       | -158.3       | 335.8                   | 0.00                    | 0.00                  | 0.00                  |
| 1,400.0                             | 34.01           | 208.12      | 1,314.7               | -345.5       | -184.6       | 391.8                   | 0.00                    | 0.00                  | 0.00                  |
| 1,500.0                             | 34.01           | 208.12      | 1,397.6               | -394.9       | -211.0       | 447.7                   | 0.00                    | 0.00                  | 0.00                  |
| <b>8 5/8"</b>                       |                 |             |                       |              |              |                         |                         |                       |                       |
| 1,530.0                             | 34.01           | 208.12      | 1,422.4               | -409.7       | -218.9       | 464.5                   | 0.00                    | 0.00                  | 0.00                  |
| 1,600.0                             | 34.01           | 208.12      | 1,480.5               | -444.2       | -237.4       | 503.7                   | 0.00                    | 0.00                  | 0.00                  |
| 1,700.0                             | 34.01           | 208.12      | 1,563.4               | -493.5       | -263.7       | 559.6                   | 0.00                    | 0.00                  | 0.00                  |
| 1,800.0                             | 34.01           | 208.12      | 1,646.2               | -542.9       | -290.1       | 615.5                   | 0.00                    | 0.00                  | 0.00                  |
| 1,900.0                             | 34.01           | 208.12      | 1,729.1               | -592.2       | -316.5       | 671.5                   | 0.00                    | 0.00                  | 0.00                  |
| 2,000.0                             | 34.01           | 208.12      | 1,812.0               | -641.6       | -342.8       | 727.4                   | 0.00                    | 0.00                  | 0.00                  |
| 2,100.0                             | 34.01           | 208.12      | 1,894.9               | -690.9       | -369.2       | 783.3                   | 0.00                    | 0.00                  | 0.00                  |
| 2,200.0                             | 34.01           | 208.12      | 1,977.8               | -740.2       | -395.6       | 839.3                   | 0.00                    | 0.00                  | 0.00                  |
| 2,300.0                             | 34.01           | 208.12      | 2,060.7               | -789.6       | -421.9       | 895.2                   | 0.00                    | 0.00                  | 0.00                  |
| 2,400.0                             | 34.01           | 208.12      | 2,143.6               | -838.9       | -448.3       | 951.2                   | 0.00                    | 0.00                  | 0.00                  |
| 2,500.0                             | 34.01           | 208.12      | 2,226.5               | -888.2       | -474.7       | 1,007.1                 | 0.00                    | 0.00                  | 0.00                  |
| 2,600.0                             | 34.01           | 208.12      | 2,309.4               | -937.6       | -501.0       | 1,063.0                 | 0.00                    | 0.00                  | 0.00                  |
| 2,700.0                             | 34.01           | 208.12      | 2,392.3               | -986.9       | -527.4       | 1,119.0                 | 0.00                    | 0.00                  | 0.00                  |
| 2,800.0                             | 34.01           | 208.12      | 2,475.2               | -1,036.2     | -553.7       | 1,174.9                 | 0.00                    | 0.00                  | 0.00                  |
| <b>G° Sand</b>                      |                 |             |                       |              |              |                         |                         |                       |                       |
| 2,825.1                             | 34.01           | 208.12      | 2,496.0               | -1,048.6     | -560.4       | 1,189.0                 | 0.00                    | 0.00                  | 0.00                  |
| 2,900.0                             | 34.01           | 208.12      | 2,558.0               | -1,085.6     | -580.1       | 1,230.9                 | 0.00                    | 0.00                  | 0.00                  |
| 3,000.0                             | 34.01           | 208.12      | 2,640.9               | -1,134.9     | -606.5       | 1,286.8                 | 0.00                    | 0.00                  | 0.00                  |
| 3,100.0                             | 34.01           | 208.12      | 2,723.8               | -1,184.3     | -632.8       | 1,342.7                 | 0.00                    | 0.00                  | 0.00                  |
| 3,200.0                             | 34.01           | 208.12      | 2,806.7               | -1,233.6     | -659.2       | 1,398.7                 | 0.00                    | 0.00                  | 0.00                  |
| 3,300.0                             | 34.01           | 208.12      | 2,889.6               | -1,282.9     | -685.6       | 1,454.6                 | 0.00                    | 0.00                  | 0.00                  |
| 3,400.0                             | 34.01           | 208.12      | 2,972.5               | -1,332.3     | -711.9       | 1,510.6                 | 0.00                    | 0.00                  | 0.00                  |
| 3,500.0                             | 34.01           | 208.12      | 3,055.4               | -1,381.6     | -738.3       | 1,566.5                 | 0.00                    | 0.00                  | 0.00                  |
| 3,600.0                             | 34.01           | 208.12      | 3,138.3               | -1,430.9     | -764.7       | 1,622.4                 | 0.00                    | 0.00                  | 0.00                  |
| 3,700.0                             | 34.01           | 208.12      | 3,221.2               | -1,480.3     | -791.0       | 1,678.4                 | 0.00                    | 0.00                  | 0.00                  |
| 3,800.0                             | 34.01           | 208.12      | 3,304.1               | -1,529.6     | -817.4       | 1,734.3                 | 0.00                    | 0.00                  | 0.00                  |
| 3,900.0                             | 34.01           | 208.12      | 3,387.0               | -1,578.9     | -843.8       | 1,790.2                 | 0.00                    | 0.00                  | 0.00                  |
| 4,000.0                             | 34.01           | 208.12      | 3,469.8               | -1,628.3     | -870.1       | 1,846.2                 | 0.00                    | 0.00                  | 0.00                  |
| 4,100.0                             | 34.01           | 208.12      | 3,552.7               | -1,677.6     | -896.5       | 1,902.1                 | 0.00                    | 0.00                  | 0.00                  |
| 4,200.0                             | 34.01           | 208.12      | 3,635.6               | -1,726.9     | -922.9       | 1,958.1                 | 0.00                    | 0.00                  | 0.00                  |
| 4,300.0                             | 34.01           | 208.12      | 3,718.5               | -1,776.3     | -949.2       | 2,014.0                 | 0.00                    | 0.00                  | 0.00                  |
| 4,400.0                             | 34.01           | 208.12      | 3,801.4               | -1,825.6     | -975.6       | 2,069.9                 | 0.00                    | 0.00                  | 0.00                  |
| 4,500.0                             | 34.01           | 208.12      | 3,884.3               | -1,875.0     | -1,001.9     | 2,125.9                 | 0.00                    | 0.00                  | 0.00                  |



## Well Planning Report



|           |                         |                              |                              |
|-----------|-------------------------|------------------------------|------------------------------|
| Database: | EDM5002                 | Local Co-ordinate Reference: | Well Piceance Federal 29-22E |
| Company:  | Laramie Energy, LLC     | TVD Reference:               | well @ 7561.0usft (H&P #522) |
| Project:  | Mesa County, CO         | MD Reference:                | well @ 7561.0usft (H&P #522) |
| Site:     | Gunderson 29-09 Pad     | North Reference:             | True                         |
| Well:     | Piceance Federal 29-22E | Survey Calculation Method:   | Minimum Curvature            |
| Wellbore: | Wellbore #1             |                              |                              |
| Design:   | Design #2               |                              |                              |

## Planned Survey

| Measured Depth (usft)            | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|----------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,600.0                          | 34.01           | 208.12      | 3,967.2               | -1,924.3     | -1,028.3     | 2,181.8                 | 0.00                    | 0.00                   | 0.00                  |
| 4,700.0                          | 34.01           | 208.12      | 4,050.1               | -1,973.6     | -1,054.7     | 2,237.8                 | 0.00                    | 0.00                   | 0.00                  |
| 4,800.0                          | 34.01           | 208.12      | 4,133.0               | -2,023.0     | -1,081.0     | 2,293.7                 | 0.00                    | 0.00                   | 0.00                  |
| 4,900.0                          | 34.01           | 208.12      | 4,215.9               | -2,072.3     | -1,107.4     | 2,349.6                 | 0.00                    | 0.00                   | 0.00                  |
| 5,000.0                          | 34.01           | 208.12      | 4,298.7               | -2,121.6     | -1,133.8     | 2,405.6                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Williams Fork</b>             |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,057.0                          | 34.01           | 208.12      | 4,346.0               | -2,149.8     | -1,148.8     | 2,437.5                 | 0.00                    | 0.00                   | 0.00                  |
| 5,100.0                          | 34.01           | 208.12      | 4,381.6               | -2,171.0     | -1,160.1     | 2,461.5                 | 0.00                    | 0.00                   | 0.00                  |
| 5,200.0                          | 34.01           | 208.12      | 4,464.5               | -2,220.3     | -1,186.5     | 2,517.5                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Drop 3° / 100'</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 5,215.8                          | 34.01           | 208.12      | 4,477.6               | -2,228.1     | -1,190.7     | 2,526.3                 | 0.00                    | 0.00                   | 0.00                  |
| 5,300.0                          | 31.49           | 208.12      | 4,548.4               | -2,268.3     | -1,212.1     | 2,571.8                 | 3.00                    | -3.00                  | 0.00                  |
| 5,400.0                          | 28.49           | 208.12      | 4,635.0               | -2,312.4     | -1,235.7     | 2,621.8                 | 3.00                    | -3.00                  | 0.00                  |
| 5,500.0                          | 25.49           | 208.12      | 4,724.1               | -2,352.4     | -1,257.1     | 2,667.2                 | 3.00                    | -3.00                  | 0.00                  |
| 5,600.0                          | 22.49           | 208.12      | 4,815.5               | -2,388.2     | -1,276.2     | 2,707.8                 | 3.00                    | -3.00                  | 0.00                  |
| 5,700.0                          | 19.49           | 208.12      | 4,908.8               | -2,419.8     | -1,293.1     | 2,743.7                 | 3.00                    | -3.00                  | 0.00                  |
| 5,800.0                          | 16.49           | 208.12      | 5,003.9               | -2,447.1     | -1,307.7     | 2,774.5                 | 3.00                    | -3.00                  | 0.00                  |
| 5,900.0                          | 13.49           | 208.12      | 5,100.5               | -2,469.9     | -1,319.8     | 2,800.4                 | 3.00                    | -3.00                  | 0.00                  |
| 6,000.0                          | 10.49           | 208.12      | 5,198.3               | -2,488.2     | -1,329.6     | 2,821.2                 | 3.00                    | -3.00                  | 0.00                  |
| 6,100.0                          | 7.49            | 208.12      | 5,297.1               | -2,502.0     | -1,337.0     | 2,836.8                 | 3.00                    | -3.00                  | 0.00                  |
| 6,200.0                          | 4.49            | 208.12      | 5,396.5               | -2,511.2     | -1,341.9     | 2,847.2                 | 3.00                    | -3.00                  | 0.00                  |
| 6,300.0                          | 1.49            | 208.12      | 5,496.4               | -2,515.8     | -1,344.4     | 2,852.4                 | 3.00                    | -3.00                  | 0.00                  |
| <b>EOD @ Vertical - TOG</b>      |                 |             |                       |              |              |                         |                         |                        |                       |
| 6,349.6                          | 0.00            | 0.00        | 5,546.0               | -2,516.3     | -1,344.7     | 2,853.1                 | 3.00                    | -3.00                  | 0.00                  |
| 6,400.0                          | 0.00            | 0.00        | 5,596.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,500.0                          | 0.00            | 0.00        | 5,696.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,600.0                          | 0.00            | 0.00        | 5,796.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,700.0                          | 0.00            | 0.00        | 5,896.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,800.0                          | 0.00            | 0.00        | 5,996.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 6,900.0                          | 0.00            | 0.00        | 6,096.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,000.0                          | 0.00            | 0.00        | 6,196.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,100.0                          | 0.00            | 0.00        | 6,296.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,200.0                          | 0.00            | 0.00        | 6,396.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,300.0                          | 0.00            | 0.00        | 6,496.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,400.0                          | 0.00            | 0.00        | 6,596.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Cameo</b>                     |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,449.6                          | 0.00            | 0.00        | 6,646.0               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,500.0                          | 0.00            | 0.00        | 6,696.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,600.0                          | 0.00            | 0.00        | 6,796.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,700.0                          | 0.00            | 0.00        | 6,896.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,800.0                          | 0.00            | 0.00        | 6,996.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 7,900.0                          | 0.00            | 0.00        | 7,096.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 8,000.0                          | 0.00            | 0.00        | 7,196.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 8,100.0                          | 0.00            | 0.00        | 7,296.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Rollins</b>                   |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,149.6                          | 0.00            | 0.00        | 7,346.0               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| <b>Base Cameo Coal</b>           |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,189.6                          | 0.00            | 0.00        | 7,386.0               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 8,200.0                          | 0.00            | 0.00        | 7,396.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| 8,300.0                          | 0.00            | 0.00        | 7,496.4               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |
| <b>TD @ 8400' MD / 7596' TVD</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 8,399.6                          | 0.00            | 0.00        | 7,596.0               | -2,516.3     | -1,344.7     | 2,853.1                 | 0.00                    | 0.00                   | 0.00                  |



## Well Planning Report



|                  |                         |                                     |                              |
|------------------|-------------------------|-------------------------------------|------------------------------|
| <b>Database:</b> | EDM5002                 | <b>Local Co-ordinate Reference:</b> | Well Piceance Federal 29-22E |
| <b>Company:</b>  | Laramie Energy, LLC     | <b>TVD Reference:</b>               | well @ 7561.0usft (H&P #522) |
| <b>Project:</b>  | Mesa County, CO         | <b>MD Reference:</b>                | well @ 7561.0usft (H&P #522) |
| <b>Site:</b>     | Gunderson 29-09 Pad     | <b>North Reference:</b>             | True                         |
| <b>Well:</b>     | Piceance Federal 29-22E | <b>Survey Calculation Method:</b>   | Minimum Curvature            |
| <b>Wellbore:</b> | Wellbore #1             |                                     |                              |
| <b>Design:</b>   | Design #2               |                                     |                              |

## Design Targets

| Target Name<br>- hit/miss target<br>- Shape                                    | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(usft) | +N/-S<br>(usft) | +E/-W<br>(usft) | Northing<br>(usft) | Easting<br>(usft) | Latitude  | Longitude   |
|--|------------------|-----------------|---------------|-----------------|-----------------|--------------------|-------------------|-----------|-------------|
| PBHL - Piceance Federal<br>- plan hits target center<br>- Circle (radius 50.0) | 0.00             | 0.00            | 7,596.0       | -2,516.3        | -1,344.7        | 1,521,047.41       | 2,350,634.04      | 39.241502 | -107.793034 |

## Casing Points

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name   | Casing<br>Diameter<br>(") | Hole<br>Diameter<br>(") |
|-----------------------------|-----------------------------|--------|---------------------------|-------------------------|
| 1,530.0                     | 1,422.4                     | 8 5/8" | 8-5/8                     | 11                      |

## Formations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Name            | Lithology | Dip<br>(°) | Dip<br>Direction<br>(°) |
|-----------------------------|-----------------------------|-----------------|-----------|------------|-------------------------|
| 2,825.1                     | 2,496.0                     | G' Sand         |           | 0.00       |                         |
| 5,057.0                     | 4,346.0                     | Williams Fork   |           | 0.00       |                         |
| 6,349.6                     | 5,546.0                     | TOG             |           | 0.00       |                         |
| 7,449.6                     | 6,646.0                     | Cameo           |           | 0.00       |                         |
| 8,149.6                     | 7,346.0                     | Rollins         |           | 0.00       |                         |
| 8,189.6                     | 7,386.0                     | Base Cameo Coal |           | 0.00       |                         |

## Plan Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment                      |
|-----------------------------|-----------------------------|-------------------|-----------------|------------------------------|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |                              |
| 150.0                       | 150.0                       | 0.0               | 0.0             | KOP (Build 3" / 100')        |
| 1,283.8                     | 1,218.4                     | -288.2            | -154.0          | EOB @ 34" Inc. / 208.12" Azm |
| 5,215.8                     | 4,477.6                     | -2,228.1          | -1,190.7        | Drop 3" / 100'               |
| 6,349.6                     | 5,546.0                     | -2,516.3          | -1,344.7        | EOD @ Vertical               |
| 8,399.6                     | 7,596.0                     | -2,516.3          | -1,344.7        | TD @ 8400' MD / 7596' TVD    |