



Project: Mesa County, CO
 Site: Hayward 0993 25-09 Pad
 Well: Hayward 0993-25-12E
 Wellbore: A-2
 Design: Design #2
 Latitude: 39.244788
 Longitude: -107.716777
 Ground Level: 8007.0
 RKB @ 8037.0usft (H&P #522)



DIRECTIONAL DRILLING

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

SECTION DETAILS

| MD | Inc | Azi | TVD | +N-S | +E-W | Dleg | TFace | VSect | Annotation |
|--------|-------|--------|--------|---------|-------|------|--------|-------|---------------------------------|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | KOP/ (Build 3°/100') |
| 1170.0 | 14.10 | 170.91 | 1165.3 | -56.8 | 9.1 | 3.00 | 170.91 | 37.8 | EOB @ 14.10° Inc. / 170.91° Azm |
| 6167.6 | 14.10 | 170.91 | 6031.7 | -1263.8 | 202.2 | 0.00 | 0.00 | 840.0 | Drop 3° / 100' |
| 6657.6 | 0.00 | 0.00 | 6497.0 | -1320.6 | 211.3 | 3.00 | 180.00 | 877.8 | EOD @ Vertical |
| 8607.6 | 0.00 | 0.00 | 8447.0 | -1320.6 | 211.3 | 0.00 | 0.00 | 877.8 | TD @ 8607.6' MD / 8447.0' TVD |

DESIGN TARGET DETAILS

| Name | TVD | +N-S | +E-W | Northing | Easting | Latitude | Longitude |
|----------------------------|--------|---------|-------|------------|------------|-----------|-------------|
| PBHL - Hayward 0993-25-12E | 8447.0 | -1320.6 | 211.3 | 1520375.53 | 2372716.24 | 39.241162 | -107.716031 |

WELL DETAILS: Hayward 0993-25-12E

| +N-S | +E-W | Northing | Easting | Latitude | Longitude |
|------|------|------------|------------|-----------|-------------|
| 0.0 | 0.0 | 1521760.92 | 2372537.22 | 39.244788 | -107.716777 |

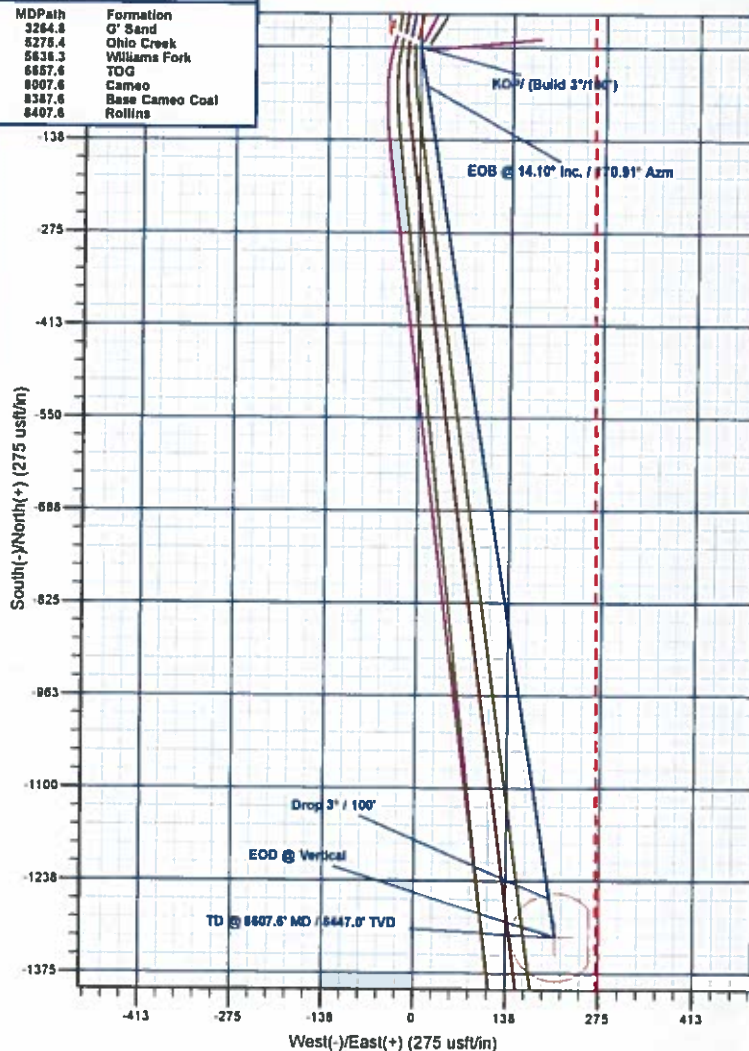
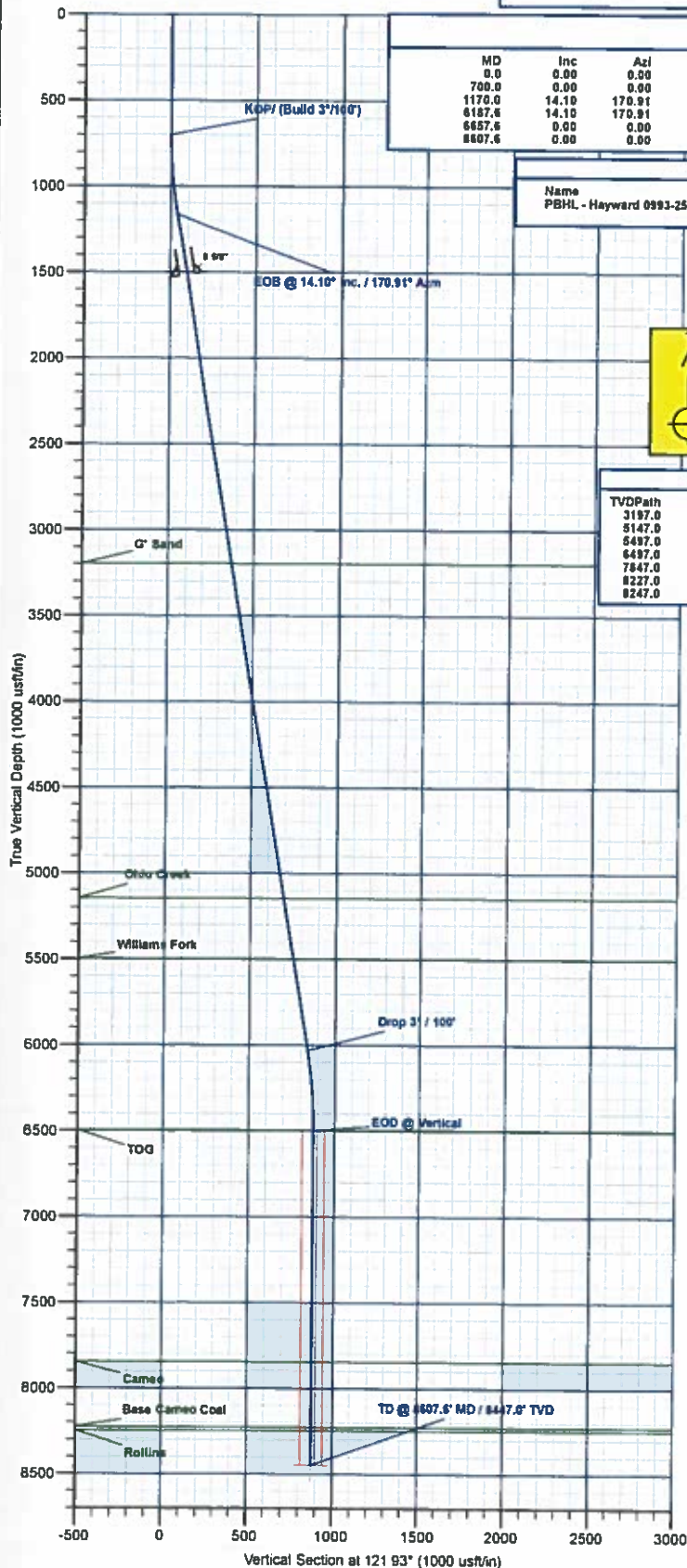
REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Hayward 0993-25-12E, True North
 Vertical (TVD) Reference: RKB @ 8037.0usft (H&P #522)
 Section (VS) Reference: Slot @ (0.0N, 0.0E)
 Measured Depth Reference: RKB @ 8037.0usft (H&P #522)
 Calculation Method: Minimum Curvature



FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|--------|-----------------|
| 3197.0 | 3264.8 | G' Sand |
| 5147.0 | 5275.4 | Ohio Creek |
| 6497.0 | 6638.3 | Williams Fork |
| 6497.0 | 6687.6 | TOG |
| 7847.0 | 8007.6 | Cameo |
| 8227.0 | 8387.6 | Base Cameo Coal |
| 8247.0 | 8407.6 | Rollins |



Plan: Design #2 (Hayward 0993-25-12E/A-2)

Created By: Will Jircik Date: 10:49, May 14 2019



Laramie Energy, LLC

**Mesa County, CO
Hayward 0993 25-09 Pad
Hayward 0993-25-12E**

A-2

Plan: Design #2

QES Well Planning Report

14 May, 2019





Well Planning Report



| | | | |
|------------------|---------------------------|-------------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Hayward 0993-25-12E |
| Company: | Laramie Energy, LLC | TVD Reference: | RKB @ 8037.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | RKB @ 8037.0usft (H&P #522) |
| Site: | Hayward 0993 25-09 Pad | North Reference: | True |
| Well: | Hayward 0993-25-12E | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | A-2 | | |
| Design: | Design #2 | | |

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

| | | | | | |
|-----------------------|----------|------------------------|-------------------|-------------------|-------------|
| Site | | Hayward 0993 25-09 Pad | | | |
| Site Position: | | Northing: | 1,519,030.59 usft | Latitude: | 39.237495 |
| From: | Lat/Long | Easting: | 2,373,084.06 usft | Longitude: | -107.713617 |
| Position Uncertainty: | 0.0 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | -1.40 |

| | | | | | | |
|----------------------|---------------------|--------------|---------------------|-------------------|---------------|--------------|
| Well | Hayward 0993-25-12E | | | | | |
| Well Position | +N/-S | 2,656.2 usft | Northing: | 1,521,700.93 usft | Latitude: | 39.244788 |
| | +E/-W | -611.7 usft | Easting: | 2,372,537.22 usft | Longitude: | -107.715777 |
| Position Uncertainty | 0.0 usft | | Wellhead Elevation: | | Ground Level: | 8,007.0 usft |

| | | | | | |
|-----------|------------|-------------|--------------------|------------------|------------------------|
| Wellbore | A-2 | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | HDGM | 5/9/2019 | 9.08 | 65.20 | 51,203.10000000 |

| | | | | |
|-------------------|----------------------------|-----------------|-----------------|------------------|
| Design | Design #2 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.0 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
| | 0.0 | 0.0 | 0.0 | 121.93 |

| Plan Sections | | | | | | | | | | |
|-----------------------------|--------------------|----------------|-----------------------------|-----------------|-----------------|-------------------------------|------------------------------|-----------------------------|------------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,170.0 | 14.10 | 170.91 | 1,165.3 | -56.8 | 9.1 | 3.00 | 3.00 | 0.00 | 170.91 | |
| 6,187.6 | 14.10 | 170.91 | 6,031.7 | -1,263.8 | 202.2 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,657.6 | 0.00 | 0.00 | 6,497.0 | -1,320.6 | 211.3 | 3.00 | -3.00 | 0.00 | 180.00 | |
| 8,607.6 | 0.00 | 0.00 | 8,447.0 | -1,320.6 | 211.3 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL - Hayward 05 |



Well Planning Report



Database: EDM 5000.1 Single User Db
Company: Laramie Energy, LLC
Project: Mesa County, CO
Site: Hayward 0993 25-09 Pad
Well: Hayward 0993-25-12E
Wellbore: A-2
Design: Design #2

Local Co-ordinate Reference: Well Hayward 0993-25-12E
TVD Reference: RKB @ 8037.0usft (H&P #522)
MD Reference: RKB @ 8037.0usft (H&P #522)
North Reference: True
Survey Calculation Method: Minimum Curvature

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) |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 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 |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| KOP/ (Build 3°/100') | | | | | | | | | |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 800.0 | 3.00 | 170.91 | 800.0 | -2.6 | 0.4 | 1.7 | 3.00 | 3.00 | 0.00 |
| 900.0 | 6.00 | 170.91 | 899.6 | -10.3 | 1.7 | 6.9 | 3.00 | 3.00 | 0.00 |
| 1,000.0 | 9.00 | 170.91 | 998.8 | -23.2 | 3.7 | 15.4 | 3.00 | 3.00 | 0.00 |
| 1,100.0 | 12.00 | 170.91 | 1,097.1 | -41.2 | 6.6 | 27.4 | 3.00 | 3.00 | 0.00 |
| EOB @ 14.10° Inc. / 170.91° Azm | | | | | | | | | |
| 1,170.0 | 14.10 | 170.91 | 1,165.3 | -56.8 | 9.1 | 37.8 | 3.00 | 3.00 | 0.00 |
| 1,200.0 | 14.10 | 170.91 | 1,194.4 | -64.0 | 10.2 | 42.6 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 14.10 | 170.91 | 1,291.4 | -88.1 | 14.1 | 58.5 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 14.10 | 170.91 | 1,388.3 | -112.1 | 17.9 | 74.5 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 14.10 | 170.91 | 1,485.3 | -136.2 | 21.8 | 90.5 | 0.00 | 0.00 | 0.00 |
| 8 5/8" | | | | | | | | | |
| 1,530.0 | 14.10 | 170.91 | 1,514.4 | -143.4 | 22.9 | 95.3 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 14.10 | 170.91 | 1,582.3 | -160.3 | 25.6 | 106.5 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 14.10 | 170.91 | 1,679.3 | -184.3 | 29.5 | 122.5 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 14.10 | 170.91 | 1,776.3 | -208.4 | 33.3 | 138.5 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 14.10 | 170.91 | 1,873.3 | -232.4 | 37.2 | 154.5 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 14.10 | 170.91 | 1,970.3 | -256.5 | 41.0 | 170.5 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 14.10 | 170.91 | 2,067.3 | -280.5 | 44.9 | 186.5 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 14.10 | 170.91 | 2,164.2 | -304.6 | 48.7 | 202.4 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 14.10 | 170.91 | 2,261.2 | -328.6 | 52.6 | 218.4 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 14.10 | 170.91 | 2,358.2 | -352.7 | 56.4 | 234.4 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 14.10 | 170.91 | 2,455.2 | -376.8 | 60.3 | 250.4 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 14.10 | 170.91 | 2,552.2 | -400.8 | 64.1 | 266.4 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 14.10 | 170.91 | 2,649.2 | -424.9 | 68.0 | 282.4 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 14.10 | 170.91 | 2,746.2 | -448.9 | 71.8 | 298.4 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 14.10 | 170.91 | 2,843.2 | -473.0 | 75.7 | 314.4 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 14.10 | 170.91 | 2,940.1 | -497.0 | 79.5 | 330.4 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 14.10 | 170.91 | 3,037.1 | -521.1 | 83.4 | 346.3 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 14.10 | 170.91 | 3,134.1 | -545.1 | 87.2 | 362.3 | 0.00 | 0.00 | 0.00 |
| G' Sand | | | | | | | | | |
| 3,264.8 | 14.10 | 170.91 | 3,197.0 | -560.7 | 89.7 | 372.7 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 14.10 | 170.91 | 3,231.1 | -569.2 | 91.1 | 378.3 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 14.10 | 170.91 | 3,328.1 | -593.2 | 94.9 | 394.3 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 14.10 | 170.91 | 3,425.1 | -617.3 | 98.8 | 410.3 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 14.10 | 170.91 | 3,522.1 | -641.4 | 102.6 | 426.3 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 14.10 | 170.91 | 3,619.0 | -665.4 | 106.5 | 442.3 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 14.10 | 170.91 | 3,716.0 | -689.5 | 110.3 | 458.3 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 14.10 | 170.91 | 3,813.0 | -713.5 | 114.2 | 474.2 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 14.10 | 170.91 | 3,910.0 | -737.6 | 118.0 | 490.2 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 14.10 | 170.91 | 4,007.0 | -761.6 | 121.9 | 506.2 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 14.10 | 170.91 | 4,104.0 | -785.7 | 125.7 | 522.2 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 14.10 | 170.91 | 4,201.0 | -809.7 | 129.5 | 538.2 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 14.10 | 170.91 | 4,298.0 | -833.8 | 133.4 | 554.2 | 0.00 | 0.00 | 0.00 |
| 4,500.0 | 14.10 | 170.91 | 4,394.9 | -857.9 | 137.2 | 570.2 | 0.00 | 0.00 | 0.00 |
| 4,600.0 | 14.10 | 170.91 | 4,491.9 | -881.9 | 141.1 | 586.2 | 0.00 | 0.00 | 0.00 |



Well Planning Report



| | | | |
|------------------|---------------------------|-------------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Hayward 0993-25-12E |
| Company: | Laramie Energy, LLC | TVD Reference: | RKB @ 8037.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | RKB @ 8037.0usft (H&P #522) |
| Site: | Hayward 0993 25-09 Pad | North Reference: | True |
| Well: | Hayward 0993-25-12E | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | A-2 | | |
| 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) |
|-----------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 4,700.0 | 14.10 | 170.91 | 4,588.9 | -906.0 | 144.9 | 602.2 | 0.00 | 0.00 | 0.00 |
| 4,800.0 | 14.10 | 170.91 | 4,685.9 | -930.0 | 148.8 | 618.1 | 0.00 | 0.00 | 0.00 |
| 4,900.0 | 14.10 | 170.91 | 4,782.9 | -954.1 | 152.6 | 634.1 | 0.00 | 0.00 | 0.00 |
| 5,000.0 | 14.10 | 170.91 | 4,879.9 | -978.1 | 156.5 | 650.1 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | 14.10 | 170.91 | 4,976.9 | -1,002.2 | 160.3 | 666.1 | 0.00 | 0.00 | 0.00 |
| 5,200.0 | 14.10 | 170.91 | 5,073.9 | -1,026.2 | 164.2 | 682.1 | 0.00 | 0.00 | 0.00 |
| Ohio Creek | | | | | | | | | |
| 5,275.4 | 14.10 | 170.91 | 5,147.0 | -1,044.4 | 167.1 | 694.2 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 14.10 | 170.91 | 5,170.8 | -1,050.3 | 168.0 | 698.1 | 0.00 | 0.00 | 0.00 |
| 5,400.0 | 14.10 | 170.91 | 5,267.8 | -1,074.3 | 171.9 | 714.1 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | 14.10 | 170.91 | 5,364.8 | -1,098.4 | 175.7 | 730.1 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | 14.10 | 170.91 | 5,461.8 | -1,122.5 | 179.6 | 746.0 | 0.00 | 0.00 | 0.00 |
| Williams Fork | | | | | | | | | |
| 5,636.3 | 14.10 | 170.91 | 5,497.0 | -1,131.2 | 181.0 | 751.9 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | 14.10 | 170.91 | 5,558.8 | -1,146.5 | 183.4 | 762.0 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 14.10 | 170.91 | 5,655.8 | -1,170.6 | 187.3 | 778.0 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 14.10 | 170.91 | 5,752.8 | -1,194.6 | 191.1 | 794.0 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 14.10 | 170.91 | 5,849.8 | -1,218.7 | 195.0 | 810.0 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 14.10 | 170.91 | 5,946.7 | -1,242.7 | 198.8 | 826.0 | 0.00 | 0.00 | 0.00 |
| Drop 3° / 100' | | | | | | | | | |
| 6,187.6 | 14.10 | 170.91 | 6,031.7 | -1,263.8 | 202.2 | 840.0 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 13.73 | 170.91 | 6,043.7 | -1,266.8 | 202.7 | 842.0 | 3.00 | -3.00 | 0.00 |
| 6,300.0 | 10.73 | 170.91 | 6,141.5 | -1,287.7 | 206.0 | 855.9 | 3.00 | -3.00 | 0.00 |
| 6,400.0 | 7.73 | 170.91 | 6,240.2 | -1,303.5 | 208.5 | 866.4 | 3.00 | -3.00 | 0.00 |
| 6,500.0 | 4.73 | 170.91 | 6,339.6 | -1,314.2 | 210.3 | 873.5 | 3.00 | -3.00 | 0.00 |
| 6,600.0 | 1.73 | 170.91 | 6,439.4 | -1,319.8 | 211.1 | 877.2 | 3.00 | -3.00 | 0.00 |
| EOD @ Vertical - TOG | | | | | | | | | |
| 6,657.6 | 0.00 | 0.00 | 6,497.0 | -1,320.6 | 211.3 | 877.8 | 3.00 | -3.00 | 0.00 |
| 6,700.0 | 0.00 | 0.00 | 6,539.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 0.00 | 0.00 | 6,639.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 0.00 | 0.00 | 6,739.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 0.00 | 0.00 | 6,839.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 0.00 | 0.00 | 6,939.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 0.00 | 0.00 | 7,039.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 0.00 | 0.00 | 7,139.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 0.00 | 0.00 | 7,239.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 0.00 | 0.00 | 7,339.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,600.0 | 0.00 | 0.00 | 7,439.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,700.0 | 0.00 | 0.00 | 7,539.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,800.0 | 0.00 | 0.00 | 7,639.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | 0.00 | 0.00 | 7,739.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | 0.00 | 0.00 | 7,839.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| Cameo | | | | | | | | | |
| 8,007.6 | 0.00 | 0.00 | 7,847.0 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | 0.00 | 0.00 | 7,939.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | 0.00 | 0.00 | 8,039.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,300.0 | 0.00 | 0.00 | 8,139.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| Base Cameo Coal | | | | | | | | | |
| 8,387.6 | 0.00 | 0.00 | 8,227.0 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,400.0 | 0.00 | 0.00 | 8,239.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| Rollins | | | | | | | | | |
| 8,407.6 | 0.00 | 0.00 | 8,247.0 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |
| 8,500.0 | 0.00 | 0.00 | 8,339.4 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |



Well Planning Report



| | | | |
|------------------|---------------------------|-------------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db | Local Co-ordinate Reference: | Well Hayward 0993-25-12E |
| Company: | Laramie Energy, LLC | TVD Reference: | RKB @ 8037.0usft (H&P #522) |
| Project: | Mesa County, CO | MD Reference: | RKB @ 8037.0usft (H&P #522) |
| Site: | Hayward 0993 25-09 Pad | North Reference: | True |
| Well: | Hayward 0993-25-12E | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | A-2 | | |
| 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) |
|-------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| TD @ 8607.6' MD / 8447.0' TVD | | | | | | | | | |
| 8,607.6 | 0.00 | 0.00 | 8,447.0 | -1,320.6 | 211.3 | 877.8 | 0.00 | 0.00 | 0.00 |

Design Targets

| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------|-------------|
| - hit/miss target | | | | | | | | | |
| - Shape | | | | | | | | | |
| PBHL - Hayward 0993 | 0.00 | 0.00 | 8,447.0 | -1,320.6 | 211.3 | 1,520,375.54 | 2,372,716.24 | 39.241162 | -107.715031 |
| - plan hits target center | | | | | | | | | |
| - Circle (radius 65.0) | | | | | | | | | |

Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|--------|---------------------|-------------------|
| 1,530.0 | 1,514.4 | 8 5/8" | 8-5/8 | 11 |

Formations

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|-----------------|-----------|---------|-------------------|
| 3,264.8 | 3,197.0 | G' Sand | | | |
| 5,275.4 | 5,147.0 | Ohio Creek | | | |
| 5,636.3 | 5,497.0 | Williams Fork | | | |
| 6,657.6 | 6,497.0 | TOG | | | |
| 8,007.6 | 7,847.0 | Cameo | | | |
| 8,387.6 | 8,227.0 | Base Cameo Coal | | | |
| 8,407.6 | 8,247.0 | Rollins | | | |

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|---------------------------------|
| | | +N/-S (usft) | +E/-W (usft) | |
| 700.0 | 700.0 | 0.0 | 0.0 | KOP/ (Build 3°/100') |
| 1,170.0 | 1,165.3 | -56.8 | 9.1 | EOB @ 14.10° Inc. / 170.91° Azm |
| 6,187.6 | 6,031.7 | -1,263.8 | 202.2 | Drop 3° / 100' |
| 6,657.6 | 6,497.0 | -1,320.6 | 211.3 | EOD @ Vertical |
| 8,607.6 | 8,447.0 | -1,320.6 | 211.3 | TD @ 8607.6' MD / 8447.0' TVD |