

GRMR Oil & Gas, LLC  
**Hamill 19-16D**  
 SHL: 163' FSL 230' FEL (SE/4SE/4)  
 Sec. 19 T5N R90W  
 BHL: ±242' FNL ±309' FEL (NE/4NE/4) Lot 5  
 Sec. 30 T5N R90W  
 Moffat County, Colorado  
 Surface: Fee  
 Mineral Lease: Fee

### Drilling Program

Please contact Mike Griffis with GRMR Oil & Gas, LLC at 720-235-5071 if there are any questions or concerns regarding this Drilling Program.

**SURFACE ELEVATION** – 6,454.3' (Ungraded ground elevation)

**SURFACE FORMATION** – Mancos – Fresh water possible

#### 1. Formation Tops

The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

| <b>Formation</b>   | <b>TVD</b>    | <b>MD</b>     | <b>Lithology</b> |
|--------------------|---------------|---------------|------------------|
| Mancos             | Surface       | Surface       | Fresh Water/Gas  |
| Base Morapos       | 530'          | 530'          | Gas/ Fresh Water |
| Buck Peak          | 2,833'        | 2,843'        | Gas/ Fresh Water |
| Toe Creek Bench    | 3,127'        | 3,139'        | Gas/Water        |
| Carlile            | 4,157'        | 4,175'        | None             |
| Dakota             | 4,756'        | 4,778'        | Gas/Water        |
| Shinarump          | 6,1080'       | 6,132'        | Gas              |
| Weber              | 6,647'        | 6,671'        | Gas/Oil/Water    |
| <b>Total Depth</b> | <b>6,956'</b> | <b>6,980'</b> |                  |

#### 2. Anticipated Depths of Oil, Gas, Water and Other Mineral Bearing Zones

The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

| <b>Formation</b>   | <b>MD</b>     | <b>Lithology</b> |
|--------------------|---------------|------------------|
| Morapos            | 530' (Base)   | Water            |
| Buck Peak          | 2,843'        | Oil/Gas          |
| Toe Creek Bench    | 3,139'        | Oil/Gas          |
| Carlile            | 4,175'        | Unknown          |
| Dakota             | 4,778'        | Unknown          |
| Shinarump          | 6,132'        | Unknown          |
| Weber              | 6,671'        | Unknown          |
| <b>Total Depth</b> | <b>6,980'</b> |                  |

All fresh water and prospectively valuable minerals encountered during drilling will be recorded by depth and adequately protected. All hydrocarbon shows will be tested to determine commercial potential.

**3. Operator's Minimum Specifications for Pressure Control Equipment**

- A. A 13-5/8" BOP with a minimum pressure rating of 5,000 psi will be configured and tested according to COGCC regulations. Maximum anticipated surface pressure is 3,011 psi.
- B. All BOP connections subject to pressure shall be flanged, welded, or clamped.
- C. Associated Equipment:
1. Pipe ram (5M)
  2. Blind ram (5M)
  3. Annular Preventer (3M or 5M, as available)
  4. Rotating head (1500 psi operating pressure)
  5. Kelly cock (or IBOP if a top drive is used)
  6. Stab in valve (s) with appropriate tool joint configuration (s)
  7. 5M choke manifold with one (1) remote operated choke control valve and one (1) manual choke valve. All valves and connections (exc choke valves) will be tested to 5M. All tees will be targeted.
  8. Hard or flexible choke line (as available). If a flexible choke line is used, it will be inspected and free damage.

**4. Casing and Cementing Program****Casing Program:**

| Interval (ft) | Hole Size (in) | Csg Sz (in) | Csg Wt (ppf) | Grade | CXN  | Length (ft) | Cmt Vol (bbl) | TOC (ft) | Condition |
|---------------|----------------|-------------|--------------|-------|------|-------------|---------------|----------|-----------|
| 0-700'        | 12-1/4"        | 9-5/8"      | 36           | J-55  | ST&C | 700         | 131           | Surface  | New       |
| 0-7,000       | 7-7/8"         | 5-1/2"      | 17           | N-80  | LT&C | 7000        | 245           | 700'     | New       |

**Cementing Program:**

|               |               | Surface                | Production            |
|---------------|---------------|------------------------|-----------------------|
| Hole Geometry | Csg OD        | 9.625                  | 5.5                   |
|               | Csg ID        | 8.921                  | 4.892                 |
|               | Hole Size     | 12.25                  | 7.875                 |
|               | Csg Depth     | 700                    | 7,000                 |
| Lead Cement   | Top (ft)      | 0                      | 700                   |
|               | Hole XS       | 100%                   | 25%                   |
|               | Vol (ft^3)    | 281.9                  | 1148.1                |
|               | Wgt (ppg)     | 11.5                   | 11.5                  |
|               | Yld (ft^3/sk) | 2.74                   | 2.982                 |
|               | Lead SX       | 110                    | 390                   |
|               | Cmnt Type     | Varicem                | Econocem              |
|               | Add:          | 0.125 lbm Poly-E-Flake | 0.25 lbm Poly-E-Flake |
|               | Add:          | 0.25 lbm Kwik Seal     | 1% Granulite TR<br>¼  |

|                    |               |                           |                          |
|--------------------|---------------|---------------------------|--------------------------|
| <b>Tail Cement</b> | Top (ft)      | 450                       | 6000                     |
|                    | Hole XS       | 100%                      | 25%                      |
|                    | Vol (ft^3)    | 176.2                     | 222.5                    |
|                    | Wgt (ppg)     | 13.5                      | 14.0                     |
|                    | Yld (ft^3/sk) | 1.68                      | 1.349                    |
|                    | Tail SX       | 110                       | 170                      |
|                    | Cmnt Type     | Varicem                   | Expandacem               |
|                    | Add:          | 0.125 lbm<br>Poly-E-Flake | 0.25 lbm<br>Poly-E-Flake |
|                    | Add:          | 0.25 lbm<br>Kwik Seal     |                          |

**Miscellaneous Casing Information (where applicable):**

- A. All casing is designed to meet or exceed the following safety factor criteria; Collapse: 1.10, Burst: 1.10, Tension: 1.60
- B. Any change in the casing and cement design will be approved by the COGCC prior to running and cementing the casing string.

**5. Mud Program****Summary of anticipated drilling fluids by hole section.**

| Interval (MD)   | Hole Size (in) | Type        | MW | VIS | FL  | pH     |
|-----------------|----------------|-------------|----|-----|-----|--------|
| Surface 0-700'  | 12.25          | FW/Gel      | 9  | 28  | NC  | 9-10.5 |
| Prod 700-7,000' | 7.875          | 2% KCL/PHPA | 9  | 40  | <10 | 9-10.5 |

**6. Testing, Coring, and Logging**

**Mud Logging:** Gas detection and mud return monitoring equipment shall be utilized throughout the drilling of each horizontal lateral. Cuttings samples will be collected every 30'.

**Coring:** Depending on drilling conditions, rotary sidewall cores may be taken in the Carlile, Dakota, Shinerump, or Weber.

**Drillstem Tests:** No DSTs planned.

**Electric Logging:** Surface Section (0' – 700'):  
Triple combo – AIT – SP-GR-TLD-CNL + BHCS  
MDT at various depths, depending on initial log run.

**Directional Surveys:** Every 100' (minimum) with MWD.

**7. Abnormal Pressures and Hydrogen Sulfide**

- A. Normal to subnormal pressure gradients expected throughout the well. Max BHP @ TD is expected to be  $\leq 3011$  psi.
- B. Maximum expected BHT @ TD: ~150 deg F.
- C. No H<sub>2</sub>S gas is anticipated.

Directional Plans: Attached

BOP Schematic:

## 13-5/8" 5M BOP and Choke Manifold Configuration

