

Submit 1 Copy To Appropriate District Office

District I – (575) 393-6161  
1625 N. French Dr., Hobbs, NM 88240  
District II – (575) 748-1283  
811 S. First St., Artesia, NM 88210  
District III – (505) 334-6178  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV – (505) 476-3460  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-103  
Revised July 18, 2013

|                                                                                                     |
|-----------------------------------------------------------------------------------------------------|
| WELL API NO.<br>30-045-35634 / 05-067-09924                                                         |
| 5. Indicate Type of Lease<br>STATE <input type="checkbox"/> FEE <input checked="" type="checkbox"/> |
| 6. State Oil & Gas Lease No.<br>FEE                                                                 |
| 7. Lease Name or Unit Agreement Name<br>Allison Unit Com                                            |
| 8. Well Number<br>138H                                                                              |
| 9. OGRID Number<br>372171                                                                           |
| 10. Pool name or Wildcat<br>Basin Fruitland Coal                                                    |

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

2. Name of Operator  
HILCORP ENERGY COMPANY

3. Address of Operator  
PO BOX 4700, FARMINGTON NM 87499

4. Well Location

Unit Letter C 176 feet from the N line and 2615 feet from the W line

Section 8 Township 32N Range 6W NMPM County San Juan

11. Elevation (Show whether DR, RKB, RT, GR, etc.)  
6134' GR

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐  
DOWNHOLE COMMINGLE ☐  
CLOSED-LOOP SYSTEM ☐  
OTHER: ☒ REVISED C-102 / DRILLING PLANS

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ P AND A ☐  
CASING/CEMENT JOB ☐  
OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Hilcorp Energy Company intends to add a pilot hole to the subject well. The pilot hole will be drilled to a target depth of 3496' (MD), then fully cased with 7" casing. A whipstock will be run, and a window will be cut into the 7" casing for a lateral to be drilled into the Blue Mesa. The 4-1/2" liner will not be tied back into the pilot hole to allow production tubing to be run to near the bottom of the pilot hole. This allows produced water to be evacuated from the production casing.

The revised C-102 and drilling plans are attached.

NMOC

MAR 23 2018

DISTRICT III

BHL-Colorado

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Amanda Ray TITLE Operations / Regulatory Technician DATE 3/23/2018

Type or print name Amanda Ray E-mail address: mray@hilcorp.com PHONE: 505-324-5122

For State Use Only

APPROVED BY: Charles H. [Signature] TITLE SUPERVISOR DISTRICT #3 DATE 3-29-18  
Conditions of Approval (if any):

51

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, N.M. 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III  
1000 Rio Brazos Rd., Aztec, N.M. 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, N.M. 87505  
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, N.M. 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                                        |                                                      |                                                    |
|--------------------------------------------------------|------------------------------------------------------|----------------------------------------------------|
| <sup>1</sup> API Number<br>30-045-35634 / 05-067-09924 | <sup>2</sup> Pool Code<br>97774                      | <sup>3</sup> Pool Name<br>FRUITLAND COAL /Colorado |
| <sup>4</sup> Property Code<br>6785                     | <sup>5</sup> Property Name<br>ALLISON UNIT COM       | <sup>6</sup> Well Number<br>138H                   |
| <sup>7</sup> GRID No.<br>372171                        | <sup>8</sup> Operator Name<br>HILCORP ENERGY COMPANY | <sup>9</sup> Elevation<br>6134                     |

<sup>10</sup> Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County   |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|----------|
| C             | 8       | 32 N     | 6 W   | LOT 3   | 176           | NORTH            | 2615          | WEST           | SAN JUAN |

<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County   |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|----------|
| D             | 22      | 32 N     | 6 W   |         | 675           | NORTH            | 990           | WEST           | LA PLATA |

|                                                                      |                               |                                  |                         |
|----------------------------------------------------------------------|-------------------------------|----------------------------------|-------------------------|
| <sup>12</sup> Dedicated Acres<br>Production will be in Colorado only | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code | <sup>15</sup> Order No. |
|----------------------------------------------------------------------|-------------------------------|----------------------------------|-------------------------|

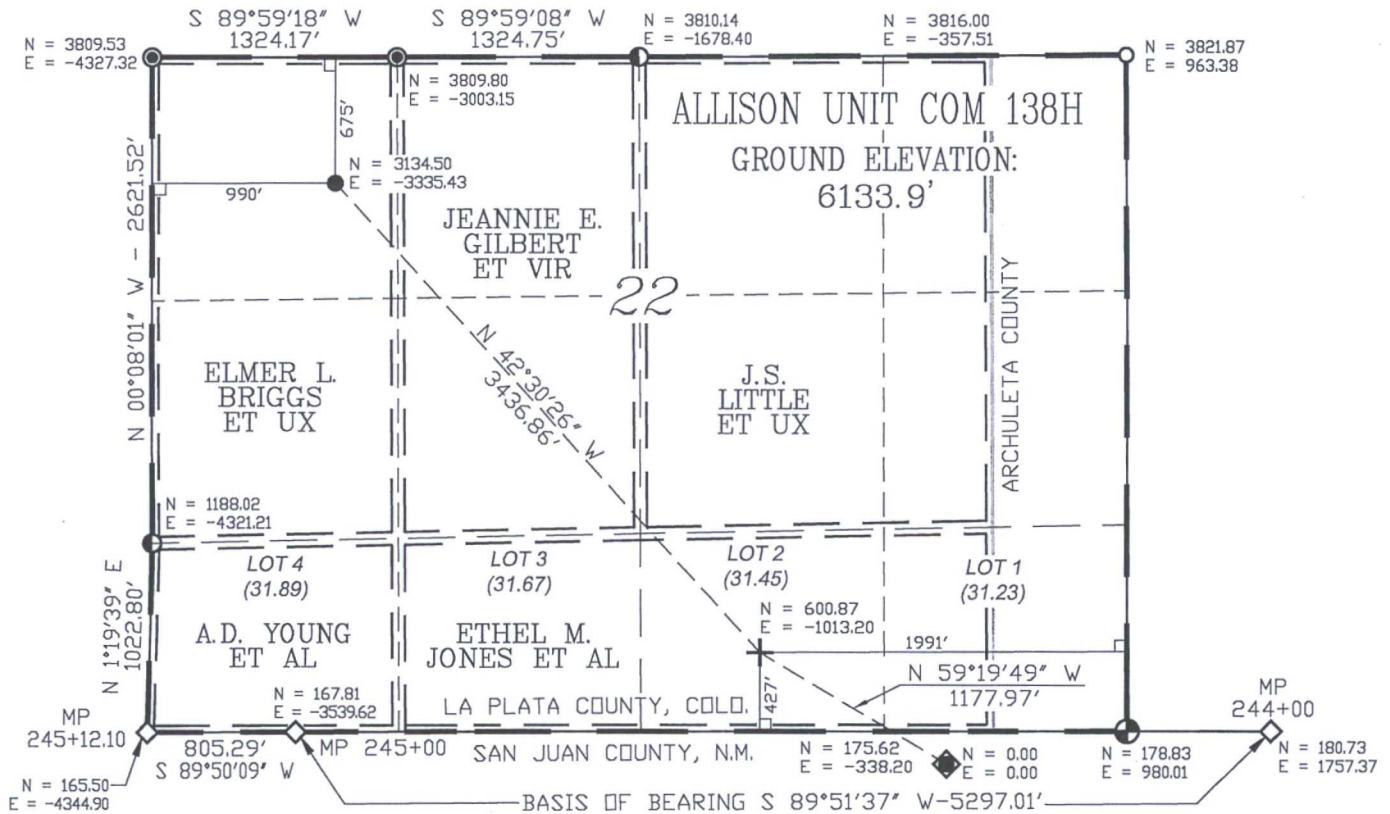
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>16 LEGEND:</b></p> <ul style="list-style-type: none"><li>○ = SURFACE LOCATION</li><li>⊙ = FOUND 1961 B.L.M. BRASS CAP (CC)</li><li>⊙ = FOUND 1961 B.L.M. BRASS CAP</li><li>◇ = MILE POST (AS LABELED)</li></ul> <p>BEARINGS &amp; DISTANCES SHOWN ARE REFERENCED TO THE NEW MEXICO COORDINATE SYSTEM, WEST ZONE, NAD 83, UNLESS OTHERWISE NOTED.</p> <p><b>BOTTOM HOLE LOCATION</b><br/>COURSE 1 - N 59°32'30" W, 1177.54'<br/>COURSE 2 - N 42°43'07" W, 3435.62'</p> <p><b>17 OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature: <u>Amanda Ray</u> Date: <u>2/1/18</u><br/>Printed Name: Amanda Ray<br/>E-mail Address: mray@hilcorp.com</p> | <p><b>18 SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>04/07/14<br/>Date of Survey<br/>Signature and Seal of Professional Surveyor: <u>Marshall W. Linden</u><br/>17078<br/>2-1-18<br/>17078<br/>Certificate Number</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# HILCORP ENERGY COMPANY

ALLISON UNIT COM 138H

176' FNL & 2615' FWL (SURFACE), SEC. 8, SAN JUAN COUNTY, N.M.  
675' FNL & 990' FWL (BOTTOM HOLE) SEC. 22, LA PLATA COUNTY, COLO.  
OF T-32-N, R-6-W, N.M.P.M.,  
GROUND ELEVATION: 6133.9'



## NOTES

1. SURFACE BEARINGS AND DISTANCES ARE SHOWN.
2. NORTHING & EASTING COORDINATES ARE REFERENCED TO LOCALIZED SYSTEM WITH THE SURFACE LOCATION DEFINED AS THE ORIGIN.
3. BEARINGS & DISTANCES SHOWN ARE BASED ON GPS OBSERVATIONS WITH A LOCALIZED TRANSVERSE MERCATOR PROJECTION, PROJECTED TO GROUND COORDINATES WITH THE ORIGIN AT THE WELL FLAG LOCATION.

## LEGEND

- ◆ SURFACE LOCATION
- BOTTOM HOLE LOCATION
- 1965 B.L.M. BRASS CAP
- ⊙ 1965 B.L.M. BRASS CAP (CC)
- ⊙ ALUMINUM CAP LS #17482
- ALUMINUM CAP LS #33648
- ◇ MILE POST (244+00, 245+00, 245+12.10)
- L DENOTES 90° TIE
- ✚ PILOT

## GEO. SURFACE VALUES

LATITUDE (NAD 83)  
NORTH 36.9996500°  
LONGITUDE (NAD 83)  
WEST 107.4819169°



SCALE: 1" = 1000'

## BASIS OF BEARING

AS MEASURED BETWEEN MILE POSTS  
244 & 245 ON THE NEW MEXICO / COLORADO STATE LINE.  
BEARS: S 89°51'37" W - 5297.01'

**HILCORP ENERGY COMPANY**



P.O. BOX 3651  
FARMINGTON, NM 87499  
OFFICE: (505) 334-0408

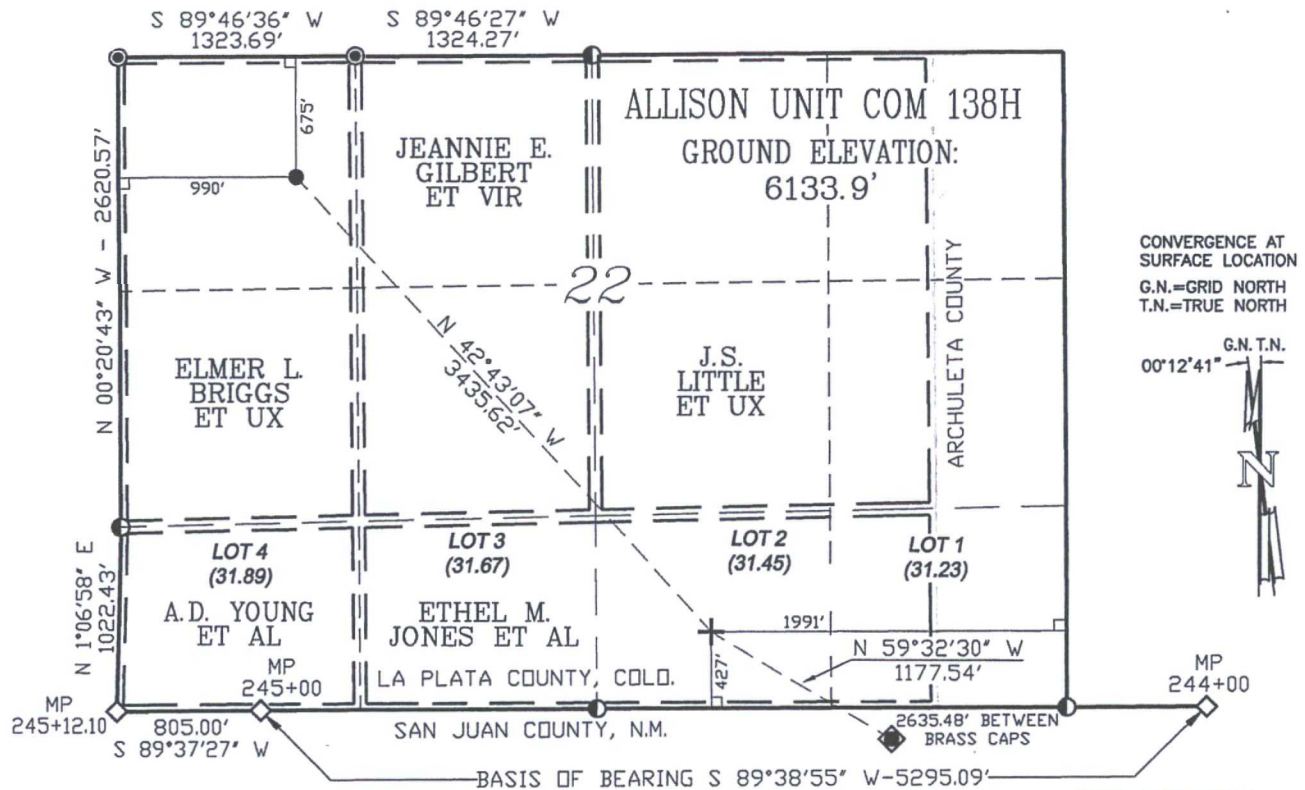
SCALE: 1" = 1000' JOB No. 10730 DATE: 05/12/14

**DRILLER'S DIAGRAM FOR  
HILCORP ENERGY COMPANY  
ALLISON UNIT COM 138H**

**SURFACE: 176' F/NL & 2615' F/WL, SEC. 8,  
T. 32 N, R. 6 W, N.M.P.M. SAN JUAN COUNTY, N.M.  
BOTTOM HOLE: 675' F/NL & 990' F/WL, SEC. 22,  
T. 32 N, R. 6 W, N.M.P.M. LA PLATA COUNTY, COLO.**

BY: C.B. DWG.#: 10730DS1 REV. DATE: 01/31/18

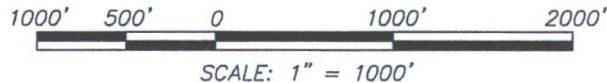
# T. 32 N., R. 6 W.



## BASIS OF BEARING/DATUM

NM SP WEST (1983) - NAVD 88 ELEV., GPS OBSERVATIONS:  
AS MEASURED BETWEEN MP 244 & MP 245 ON THE  
NEW MEXICO/COLORADO STATE LINE

BASIS OF ELEVATION: AS MEASURED AT OPUS ADJUSTED CONTROL POINT  
LOCATED IN THE SW/4 OF SECTION 9, ELEVATION: 6148.68',  
T-32-N, R-6-W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO



## GEO. BOTTOM HOLE VALUES

(CALCULATED BOTTOM HOLE VALUES  
DERIVED FROM HILCORP DESIGN FOOTAGES)

## GEO. SURFACE VALUES

LATITUDE (NAD 83)  
NORTH 36.9996500°  
LONGITUDE (NAD 83)  
WEST 107.4819169°

LATITUDE (NAD 27)  
NORTH 36°59.97870'  
LONGITUDE (NAD 27)  
WEST 107°28.87869'

LATITUDE (NAD 83)  
NORTH 37.0082561°  
LONGITUDE (NAD 83)  
WEST 107.4933364°

LATITUDE (NAD 27)  
NORTH 37°00.49507'  
LONGITUDE (NAD 27)  
WEST 107°29.56383'

## SURVEYOR'S STATEMENT:

I, Marshall W. Lindeen, of Farmington, New Mexico, hereby state: This plat was made from notes taken during an actual survey under my direct supervision on APRIL 07, 2014, and it correctly shows the location of ALLISON UNIT COM 138H.



## LEGEND

- ◆ SURFACE LOCATION
- BOTTOM HOLE LOCATION
- ⊕ PILOT
- 1965 B.L.M. BRASS CAP

- ALUMINUM CAP LS #17482
- ◇ MILE POST (244+00, 245+00, 245+12.10)
- L DENOTES 90° TIE

## PILOT

(CALCULATED VALUES)  
LATITUDE (NAD 83)  
NORTH 37.0013000°  
LONGITUDE (NAD 83)  
WEST 107.4853856°  
LATITUDE (NAD 27)  
NORTH 37°00.07770'  
LONGITUDE (NAD 27)  
WEST 107°29.08680'

## NOTE:

P.D.O.P. VALUE: N/A  
BOTTOM HOLE IS CALCULATED POSITION. SURFACE USE IS NOT APPLICABLE.

**HILCORP ENERGY COMPANY**



P.O. BOX 3651  
FARMINGTON, NM 87499  
OFFICE: (505) 334-0408

SCALE: 1" = 1000'

JOB No. 10730

DATE: 05/07/14

**PLAT OF DRILLING LOCATION FOR  
HILCORP ENERGY COMPANY  
ALLISON UNIT COM 138H**

**SURFACE: 176' F/NL & 2615' F/WL, SEC. 8,  
T. 32 N, R. 6 W, N.M.P.M., SAN JUAN COUNTY, N.M.  
BOTTOM HOLE: 675' F/NL & 990' F/WL, SEC. 22,  
T. 32 N, R. 6 W, N.M.P.M., LA PLATA COUNTY, COLO.**



## Allison Unit COM #138H

Hilcorp Energy Company proposes to drill and complete the referenced horizontal well targeting a coal seam with in the Fruitland formation. The original procedure in the APD was modified to include a pilot hole, which will be fully cased and cemented.

### 1. Location

Allison Unit COM #138H

SHL: 176' FNL, 2,615' FWL – T32N, R06W, Sec 08 (New Mexico)

BHL: 675' FNL, 990' FWL – T 32N, R06W, Sec 22 (Colorado)

### 2. Geological Markers

Anticipated formation tops with comments of any possible water, gas, or oil shows are indicated below:

| Formation   | Depth (TVD) | Remarks |
|-------------|-------------|---------|
| Nacimiento  | 277'        |         |
| Ojo Alamo   | 1,824'      |         |
| Kirtland    | 1,937'      |         |
| Fruitland   | 2,377'      | Gas     |
| Blue Coal:  |             |         |
| Pargin Seam | 2,575'      | Gas     |

See attached directional Plan for anticipated formation tops in measured depth.

### 3. Pressure Control Equipment

See attached BOPE and choke manifold schematic for a diagram of pressure control equipment.

- BOPE will be nipped up on top of wellhead after surface casing is set and cemented.
- Pressure control configuration will be designated to meet the minimum 2M standards.
- All equipment will have 3M pressure ratings.
- A rotating head will be rigged up on top of annular as seen in attached diagram.

### 4. Casing & Cement Program

- a. The proposed casing program is outlined below:

| Proposed Casing Program           |           |             |                 |                      |
|-----------------------------------|-----------|-------------|-----------------|----------------------|
| Casing                            | Hole Size | Casing Size | Weight/Grade    | Set Depth TVD/MD     |
| Surface                           | 12-1/4"   | 9-5/8"      | 32.3# H-40      | 500' MD/TVD          |
| Intermediate                      | 8-3/4"    | 7"          | 23# J-55/L-80   | 3496' MD / 2760' TVD |
| Production Liner (Pre-Perforated) | 6-1/4"    | 4-1/2"      | 11.6# J-55/L-80 | 6507' MD / 2548' TVD |

The intermediate hole section will be drilled to target depth, then fully cased and cemented with 7" casing.

*2914 MD 2513 TVD PER AR/cP*

A whipstock will be run, and window will be cut in the 7" casing above the Blue Mesa formation to allow for a lateral to be drilled in the Blue Mesa.

The whipstock will then be recovered. The 4-1/2" liner will be run outside the window, and not tied back into the pilot hole to allow production tubing to be run to near the bottom of the pilot hole.

If the 6-1/4" hole is not drilled to total MD, the production liner setting depth and length will be adjusted accordingly.

The 7" casing string will be set inside the setback boundary line.

b. The proposed cement program is outlined below:

| Cement Program |            |                     |                                                                                                                                                                                                                                                                                               |                    |
|----------------|------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Interval       | Depth (MD) | Volume              | Slurry                                                                                                                                                                                                                                                                                        | Planned Cement Top |
| Surface        | 500        | 253 ft <sup>3</sup> | Lead Cmt: Type III Cmt<br>0.25% FL-52, 0.25 pps celloflake<br>1.25 ft <sup>3</sup> / sk - 5.75 gal/sk<br>15.2 ppg                                                                                                                                                                             | Surface            |
| Intermediate   | 3,496'     | 788 ft <sup>3</sup> | Lead Cmt: Premium Lite<br>3% CaCl, 0.25 pps celloflake, 5 ppm LCM-1<br>0.4% FL-52, 8% Bentonite, 0.4%SMS<br>2.13 ft <sup>3</sup> /sk -- 11.29 gal/sk<br>12.1 ppg<br><br>Tail Cmt: Type III<br>1% CaCl, 0.25 pps celloflake, 0.2% FL-52<br>1.38 ft <sup>3</sup> /sk -- 6.64 gal/sk<br>14.6 ppg | Surface            |
| Production     | 6,507'     | N/A                 | N/A - Open hole with pre-perforated liner.                                                                                                                                                                                                                                                    | N/A                |

Slurry additives may be adjusted as needed to accommodate required pump and compressive test times.

For the intermediate hole section a 2-stage cement job may be performed if hole conditions indicate during operations. Stage tool will be placed appropriately as conditions indicate.

- c. The proposed centralizer program is shown below:

| Centralizer Program |                                                                                                                                                                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interval            | Centralizers                                                                                                                                                                                                                                                                                         |
| Surface             | 1 per joint on bottom 3 joints                                                                                                                                                                                                                                                                       |
| Intermediate        | 10' above shoe joint with collar clamp<br>On top of 2nd, 4th, 6th, 8th, 10th joints<br>1 every 4th joint to Ojo Alamo<br>1 every joint through Ojo Alamo<br>1 Turbolizer will be placed mid-way into Ojo Alamo<br>1 every 4th joint from top of Ojo Alamo to surface shoe<br>1 inside surface casing |
| Production          | N/A                                                                                                                                                                                                                                                                                                  |

To allow adequate time for cement to achieve a minimum of 500 psi compressive strength, a minimum of 8 hours wait on cement time for each hole section will be observed. The wellhead will not be installed, casing will not be tested, and the prior casing shoe will not be drilled out until adequate wait on cement time is achieved.

#### 5. Drilling Fluids

- a. The proposed drilling fluid program is outlined below:

| Mud Program  |                         |                  |                 |
|--------------|-------------------------|------------------|-----------------|
| Interval     | Mud Type                | Weight (ppg)     | Fluid Loss (cc) |
| Surface      | Air / Water Gel System  | Air<br>8.3 - 9.2 | NC              |
| Intermediate | LSND / Gel System       | 8.4 - 9.5        | 6 - 16          |
| Production   | LSND Brine (if needed)* | 8.5 - 10         | 4 - 14          |

\*In the production hole, Brine will be utilized only if a weighting agent is needed to raise MW (for either well control or wellbore stability purposes).

LCM may be added to the mud system if hole conditions indicate.

- b. If brine is utilized, any cuttings drilled with brine will be hauled off to an approved disposal site.

#### 6. Abnormal Pressures and Hazards

- No over-pressured intervals expected.
- Estimated Reservoir Pressure = 1,500 psi

- Maximum Anticipated Surface Pressure = 1,300 psi
- No hydrogen sulfide gas is expected based off nearby well production.

7. Testing, Logging, Coring

| Testing, Logging, Coring Procedure |                                  |           |
|------------------------------------|----------------------------------|-----------|
| Evaluation Method                  | Start Depth                      | End depth |
| Mud Logs                           | Fruitland Coal Top               | TD        |
| MWD Directional Surveys            | KOP                              | TD        |
| LWD GR                             | 7" window                        | TD        |
| Triple Combo                       | 8-3/4" hole section              |           |
| Temp Survey                        | If needed on intermediate casing |           |

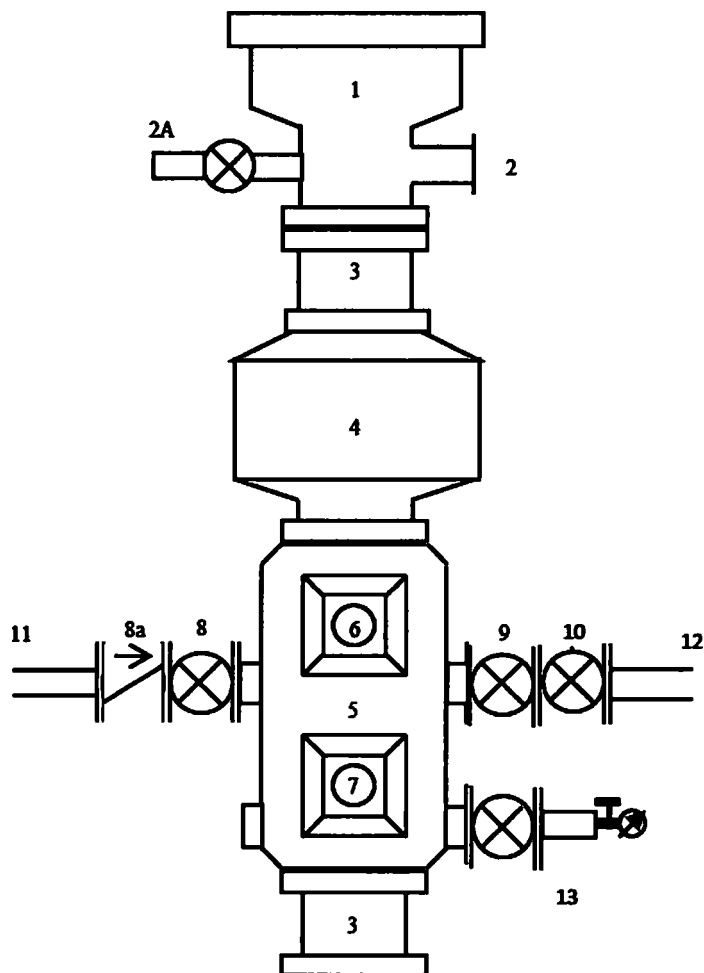
8. Directional Plan

The planned wellbore directional plan and plot are attached

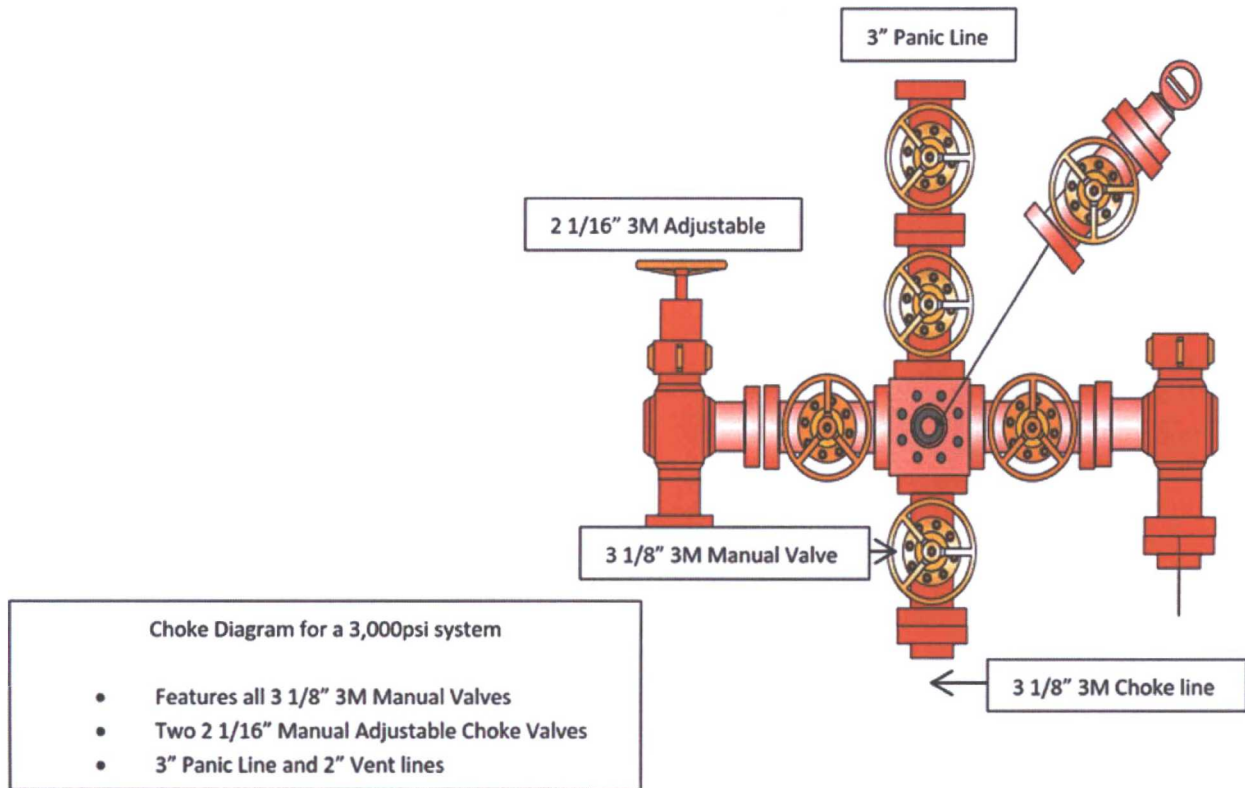
The planned directional plan is built of geological targets from offset wells. The production hole will be landed and drilled within target formation horizontally utilizing LWD equipment to help steer the wellbore. On site adjustments will be made to the directional plan as formation and hole indicates.

## BOPE Schematic – Aztec 777

1. Rotating Head
2. Flow line
- 2A. Fill up line and valve
3. Spacer Spools (as needed)
4. 11" 3M Annular Preventer
5. 11" 3M Double Ram Preventer
6. Blind Rams
7. Pipe Rams
8. 3M Gate Valve (2")
- 8a. Check valve
9. 3M Manual Gate Valve (3")
10. 3M Manual Gate Valve (3")
11. Kill Line Connection, 2" hard line
12. Choke Line (3" Co-Flex)
13. Secondary outlet with valve, bull plug, needle valve, and pressure gauge



## Choke Manifold Schematic – Aztec 777





**HILCORP ENERGY COMPANY**  
**ALLISON UNIT COM #138H (PILOT)**  
**SAN JUAN BASIN NM / CO**  
**6134' GL + 15' KB**



WELL DETAILS: Allison Unit Com #138H

|                       |               |                         |                                |
|-----------------------|---------------|-------------------------|--------------------------------|
| Ground Level: 6134.00 |               |                         |                                |
| +N/-S<br>0.00         | +E/-W<br>0.00 | Northing<br>1127387.720 | Longitude<br>107° 28' 54.901 W |
|                       |               | Easting<br>2421227.380  | Latitude<br>36° 59' 58.740 N   |

SECTION DETAILS

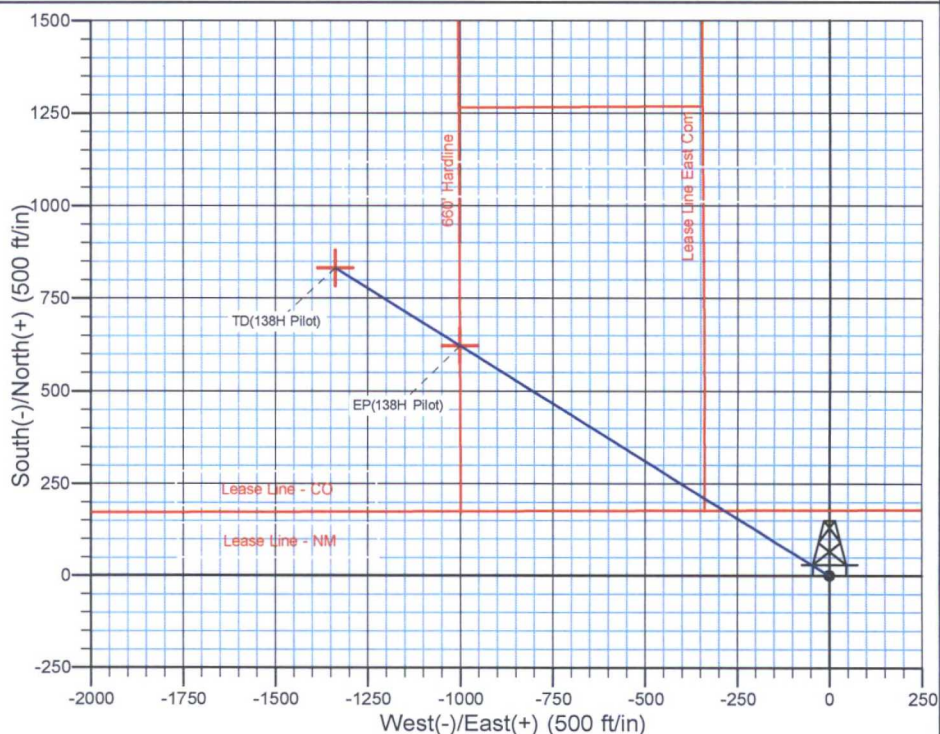
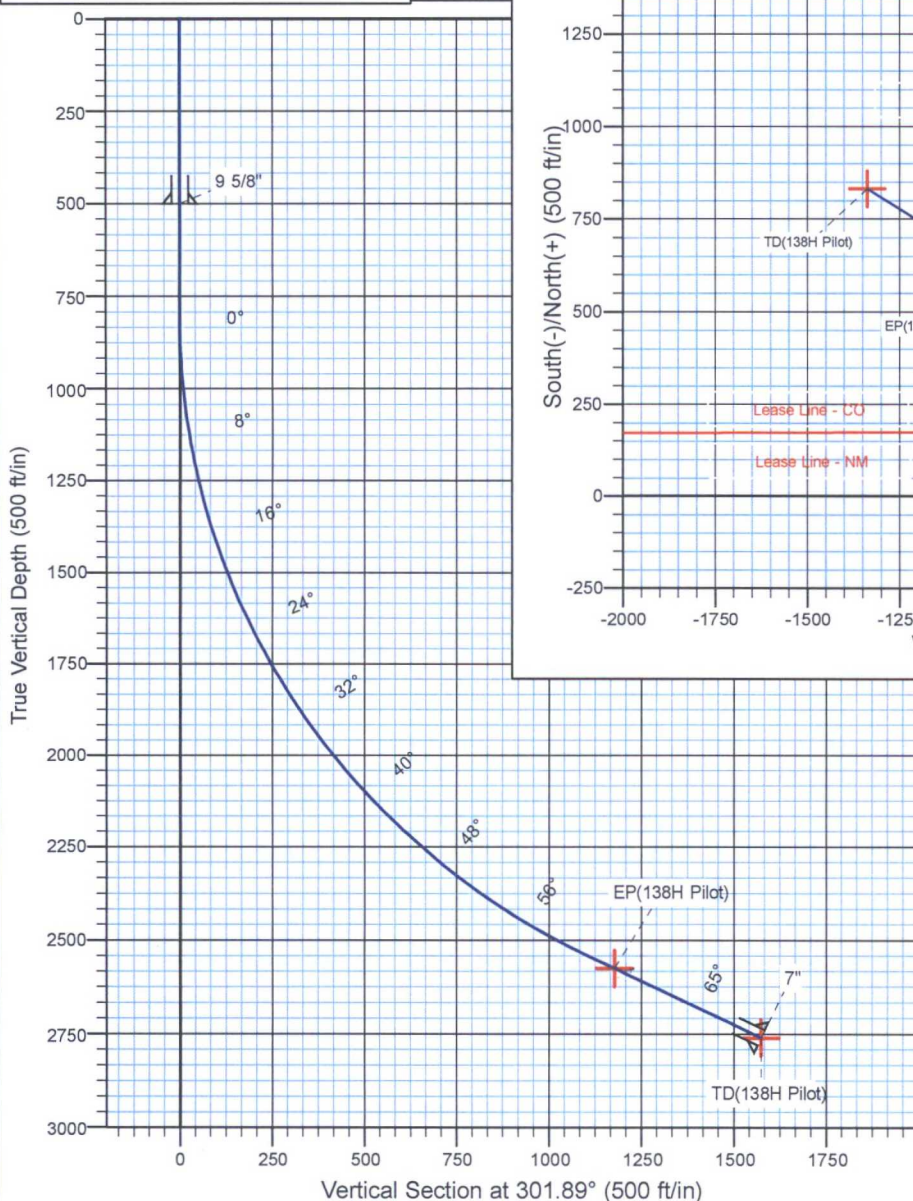
| Sec | MD      | Inc   | Azi    | TVD     | +N/-S  | +E/-W    | Dleg | TFace  | Vsect   | Target         |
|-----|---------|-------|--------|---------|--------|----------|------|--------|---------|----------------|
| 1   | 0.00    | 0.00  | 0.00   | 0.00    | 0.00   | 0.00     | 0.00 | 0.00   | 0.00    |                |
| 2   | 809.10  | 0.00  | 0.00   | 809.10  | 0.00   | 0.00     | 0.00 | 0.00   | 0.00    |                |
| 3   | 2975.77 | 65.00 | 301.89 | 2540.02 | 582.50 | -936.31  | 3.00 | 301.89 | 1102.72 |                |
| 4   | 3058.53 | 65.00 | 301.89 | 2575.00 | 622.12 | -1000.00 | 0.00 | 0.00   | 1177.73 | EP(138H Pilot) |
| 5   | 3496.28 | 65.00 | 301.89 | 2760.00 | 831.69 | -1336.87 | 0.00 | 0.00   | 1574.46 | TD(138H Pilot) |

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

| Name           | TVD     | +N/-S  | +E/-W    | Northing    | Easting     | Latitude       | Longitude         | Shape |
|----------------|---------|--------|----------|-------------|-------------|----------------|-------------------|-------|
| EP(138H Pilot) | 2575.00 | 622.12 | -1000.00 | 1128009.840 | 2420227.380 | 37° 0' 4.680 N | 107° 29' 7.388 W  | Point |
| TD(138H Pilot) | 2760.00 | 831.69 | -1336.87 | 1128219.408 | 2419890.513 | 37° 0' 6.681 N | 107° 29' 11.595 W | Point |

CASING DETAILS

| TVD  | MD   | Name   |
|------|------|--------|
| 500  | 500  | 9 5/8" |
| 2760 | 3496 | 7"     |



PROJECT DETAILS: San Juan County, NM / CO (NAD 83)

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

Allison Unit Com #138H Pilot p1

Created By: Frank Scardino Date: 1/22/2018  
 Checked: \_\_\_\_\_ Date: \_\_\_\_\_



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Pilot

Plan: Design #1

## **Standard Planning Report**

22 January, 2018





# Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Pilot                             |                              |                             |
| Design:   | Design #1                         |                              |                             |

|             |                                   |               |                |
|-------------|-----------------------------------|---------------|----------------|
| Project     | San Juan County, NM / CO (NAD 83) |               |                |
| Map System: | US State Plane 1983               | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983         |               |                |
| Map Zone:   | Colorado Southern Zone            |               |                |

|                       |                        |                   |                    |
|-----------------------|------------------------|-------------------|--------------------|
| Site                  | Allison Unit Com #138H |                   |                    |
| Site Position:        |                        | Northing:         | 1,127,387.720 usft |
| From:                 | Map                    | Easting:          | 2,421,227.380 usft |
| Position Uncertainty: | 0.00 ft                | Slot Radius:      | 13.200 in          |
|                       |                        | Latitude:         | 36° 59' 58.740 N   |
|                       |                        | Longitude:        | 107° 28' 54.901 W  |
|                       |                        | Grid Convergence: | -1.22 °            |

|                      |                        |                     |                   |
|----------------------|------------------------|---------------------|-------------------|
| Well                 | Allison Unit Com #138H |                     |                   |
| Well Position        | +N/-S                  | 0.00 ft             | Northing:         |
|                      | +E/-W                  | 0.00 ft             | Easting:          |
| Position Uncertainty | 0.00 ft                | Wellhead Elevation: | 0.00 ft           |
|                      |                        | Latitude:           | 36° 59' 58.740 N  |
|                      |                        | Longitude:          | 107° 28' 54.901 W |
|                      |                        | Ground Level:       | 6,134.00 ft       |

|           |            |             |                 |               |                     |
|-----------|------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | Pilot      |             |                 |               |                     |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | IGRF2015   | 1/22/2018   | 9.11            | 63.60         | 50,155              |

|                   |                          |               |               |                  |
|-------------------|--------------------------|---------------|---------------|------------------|
| Design            | Design #1                |               |               |                  |
| Audit Notes:      |                          |               |               |                  |
| Version:          | Phase:                   | PLAN          | Tie On Depth: | 0.00             |
| Vertical Section: | Depth From (TVD)<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Direction<br>(°) |
|                   | 0.00                     | 0.00          | 0.00          | 301.89           |

|                     |                 |             |                     |            |            |                       |                      |                     |         |                |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|----------------|
| Plan Sections       |                 |             |                     |            |            |                       |                      |                     |         |                |
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target         |
| 0.00                | 0.00            | 0.00        | 0.00                | 0.00       | 0.00       | 0.00                  | 0.00                 | 0.00                | 0.00    |                |
| 809.10              | 0.00            | 0.00        | 809.10              | 0.00       | 0.00       | 0.00                  | 0.00                 | 0.00                | 0.00    |                |
| 2,975.77            | 65.00           | 301.89      | 2,540.02            | 582.50     | -936.31    | 3.00                  | 3.00                 | 0.00                | 301.89  |                |
| 3,058.53            | 65.00           | 301.89      | 2,575.00            | 622.12     | -1,000.00  | 0.00                  | 0.00                 | 0.00                | 0.00    | EP(138H Pilot) |
| 3,496.28            | 65.00           | 301.89      | 2,760.00            | 831.69     | -1,336.87  | 0.00                  | 0.00                 | 0.00                | 0.00    | TD(138H Pilot) |



# Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Pilot                             |                              |                             |
| Design:   | Design #1                         |                              |                             |

## Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 809.10              | 0.00            | 0.00        | 809.10              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 900.00              | 2.73            | 301.89      | 899.97              | 1.14       | -1.84      | 2.16                  | 3.00                  | 3.00                 | 0.00                |
| 1,000.00            | 5.73            | 301.89      | 999.68              | 5.04       | -8.09      | 9.53                  | 3.00                  | 3.00                 | 0.00                |
| 1,100.00            | 8.73            | 301.89      | 1,098.88            | 11.68      | -18.77     | 22.11                 | 3.00                  | 3.00                 | 0.00                |
| 1,200.00            | 11.73           | 301.89      | 1,197.28            | 21.06      | -33.85     | 39.86                 | 3.00                  | 3.00                 | 0.00                |
| 1,300.00            | 14.73           | 301.89      | 1,294.61            | 33.14      | -53.27     | 62.74                 | 3.00                  | 3.00                 | 0.00                |
| 1,400.00            | 17.73           | 301.89      | 1,390.62            | 47.90      | -77.00     | 90.68                 | 3.00                  | 3.00                 | 0.00                |
| 1,500.00            | 20.73           | 301.89      | 1,485.03            | 65.30      | -104.96    | 123.61                | 3.00                  | 3.00                 | 0.00                |
| 1,600.00            | 23.73           | 301.89      | 1,577.59            | 85.28      | -137.07    | 161.43                | 3.00                  | 3.00                 | 0.00                |
| 1,700.00            | 26.73           | 301.89      | 1,668.04            | 107.79     | -173.26    | 204.05                | 3.00                  | 3.00                 | 0.00                |
| 1,800.00            | 29.73           | 301.89      | 1,756.14            | 132.77     | -213.41    | 251.34                | 3.00                  | 3.00                 | 0.00                |
| 1,900.00            | 32.73           | 301.89      | 1,841.64            | 160.15     | -257.43    | 303.18                | 3.00                  | 3.00                 | 0.00                |
| 2,000.00            | 35.73           | 301.89      | 1,924.31            | 189.86     | -305.18    | 359.42                | 3.00                  | 3.00                 | 0.00                |
| 2,100.00            | 38.73           | 301.89      | 2,003.93            | 221.81     | -356.54    | 419.91                | 3.00                  | 3.00                 | 0.00                |
| 2,200.00            | 41.73           | 301.89      | 2,080.27            | 255.92     | -411.37    | 484.48                | 3.00                  | 3.00                 | 0.00                |
| 2,300.00            | 44.73           | 301.89      | 2,153.13            | 292.10     | -469.52    | 552.96                | 3.00                  | 3.00                 | 0.00                |
| 2,400.00            | 47.73           | 301.89      | 2,222.30            | 330.24     | -530.82    | 625.16                | 3.00                  | 3.00                 | 0.00                |
| 2,500.00            | 50.73           | 301.89      | 2,287.60            | 370.24     | -595.12    | 700.89                | 3.00                  | 3.00                 | 0.00                |
| 2,600.00            | 53.73           | 301.89      | 2,348.84            | 411.98     | -662.23    | 779.92                | 3.00                  | 3.00                 | 0.00                |
| 2,700.00            | 56.73           | 301.89      | 2,405.87            | 455.37     | -731.97    | 862.05                | 3.00                  | 3.00                 | 0.00                |
| 2,800.00            | 59.73           | 301.89      | 2,458.52            | 500.27     | -804.14    | 947.06                | 3.00                  | 3.00                 | 0.00                |
| 2,900.00            | 62.73           | 301.89      | 2,506.65            | 546.57     | -878.56    | 1,034.70              | 3.00                  | 3.00                 | 0.00                |
| 2,975.77            | 65.00           | 301.89      | 2,540.02            | 582.50     | -936.31    | 1,102.72              | 3.00                  | 3.00                 | 0.00                |
| 3,000.00            | 65.00           | 301.89      | 2,550.26            | 594.10     | -954.96    | 1,124.68              | 0.00                  | 0.00                 | 0.00                |
| 3,058.53            | 65.00           | 301.89      | 2,575.00            | 622.12     | -1,000.00  | 1,177.73              | 0.00                  | 0.00                 | 0.00                |
| EP(138H Pilot)      |                 |             |                     |            |            |                       |                       |                      |                     |
| 3,100.00            | 65.00           | 301.89      | 2,592.53            | 641.97     | -1,031.91  | 1,215.31              | 0.00                  | 0.00                 | 0.00                |
| 3,200.00            | 65.00           | 301.89      | 2,634.79            | 689.85     | -1,108.87  | 1,305.94              | 0.00                  | 0.00                 | 0.00                |
| 3,300.00            | 65.00           | 301.89      | 2,677.05            | 737.72     | -1,185.82  | 1,396.57              | 0.00                  | 0.00                 | 0.00                |
| 3,400.00            | 65.00           | 301.89      | 2,719.31            | 785.60     | -1,262.78  | 1,487.20              | 0.00                  | 0.00                 | 0.00                |
| 3,496.28            | 65.00           | 301.89      | 2,760.00            | 831.69     | -1,336.87  | 1,574.46              | 0.00                  | 0.00                 | 0.00                |
| 7" - TD(138H Pilot) |                 |             |                     |            |            |                       |                       |                      |                     |

## Design Targets

| Target Name               | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude       | Longitude         |
|---------------------------|---------------|--------------|----------|------------|------------|-----------------|----------------|----------------|-------------------|
| - hit/miss target         |               |              |          |            |            |                 |                |                |                   |
| - Shape                   |               |              |          |            |            |                 |                |                |                   |
| EP(138H Pilot)            | 0.00          | 360.00       | 2,575.00 | 622.12     | -1,000.00  | 1,128,009.840   | 2,420,227.380  | 37° 0' 4.680 N | 107° 29' 7.388 W  |
| - plan hits target center |               |              |          |            |            |                 |                |                |                   |
| - Point                   |               |              |          |            |            |                 |                |                |                   |
| TD(138H Pilot)            | 0.00          | 360.00       | 2,760.00 | 831.69     | -1,336.87  | 1,128,219.409   | 2,419,890.513  | 37° 0' 6.681 N | 107° 29' 11.595 W |
| - plan hits target center |               |              |          |            |            |                 |                |                |                   |
| - Point                   |               |              |          |            |            |                 |                |                |                   |



## Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Pilot                             |                              |                             |
| Design:   | Design #1                         |                              |                             |

| Casing Points       |                     |        |                      |                    |  |
|---------------------|---------------------|--------|----------------------|--------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Name   | Casing Diameter (in) | Hole Diameter (in) |  |
| 500.00              | 500.00              | 9 5/8" | 9.625                | 12.250             |  |
| 3,496.28            | 2,760.00            | 7"     | 7.000                | 7.500              |  |



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Pilot

Plan: Design #1

## **Standard Planning Report - Geographic**

22 January, 2018





## Planning Report - Geographic



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Pilot                             |                              |                             |
| Design:   | Design #1                         |                              |                             |

|             |                                   |               |                |
|-------------|-----------------------------------|---------------|----------------|
| Project     | San Juan County, NM / CO (NAD 83) |               |                |
| Map System: | US State Plane 1983               | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983         |               |                |
| Map Zone:   | Colorado Southern Zone            |               |                |

|                       |                        |                   |                    |
|-----------------------|------------------------|-------------------|--------------------|
| Site                  | Allison Unit Com #138H |                   |                    |
| Site Position:        |                        | Northing:         | 1,127,387.720 usft |
| From:                 | Map                    | Easting:          | 2,421,227.380 usft |
| Position Uncertainty: | 0.00 ft                | Slot Radius:      | 13.200 in          |
|                       |                        | Latitude:         | 36° 59' 58.740 N   |
|                       |                        | Longitude:        | 107° 28' 54.901 W  |
|                       |                        | Grid Convergence: | -1.22 °            |

|                      |                        |                     |                   |
|----------------------|------------------------|---------------------|-------------------|
| Well                 | Allison Unit Com #138H |                     |                   |
| Well Position        | +N/-S                  | 0.00 ft             | Northing:         |
|                      | +E/-W                  | 0.00 ft             | Easting:          |
| Position Uncertainty | 0.00 ft                | Wellhead Elevation: | 0.00 ft           |
|                      |                        | Latitude:           | 36° 59' 58.740 N  |
|                      |                        | Longitude:          | 107° 28' 54.901 W |
|                      |                        | Ground Level:       | 6,134.00 ft       |

|           |            |             |                     |
|-----------|------------|-------------|---------------------|
| Wellbore  | Pilot      |             |                     |
| Magnetics | Model Name | Sample Date | Declination (°)     |
|           | IGRF2015   | 1/22/2018   | 9.11                |
|           |            |             | Dip Angle (°)       |
|           |            |             | 63.60               |
|           |            |             | Field Strength (nT) |
|           |            |             | 50,155              |

|                   |                  |       |               |
|-------------------|------------------|-------|---------------|
| Design            | Design #1        |       |               |
| Audit Notes:      |                  |       |               |
| Version:          | Phase:           | PLAN  | Tie On Depth: |
|                   |                  |       | 0.00          |
| Vertical Section: | Depth From (TVD) | +N/-S | +E/-W         |
|                   | (ft)             | (ft)  | (ft)          |
|                   | 0.00             | 0.00  | 0.00          |
|                   |                  |       | Direction (°) |
|                   |                  |       | 301.89        |

|                     |                 |             |                     |            |            |                       |                      |                     |         |                |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|----------------|
| Plan Sections       |                 |             |                     |            |            |                       |                      |                     |         |                |
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target         |
| 0.00                | 0.00            | 0.00        | 0.00                | 0.00       | 0.00       | 0.00                  | 0.00                 | 0.00                | 0.00    |                |
| 809.10              | 0.00            | 0.00        | 809.10              | 0.00       | 0.00       | 0.00                  | 0.00                 | 0.00                | 0.00    |                |
| 2,975.77            | 65.00           | 301.89      | 2,540.02            | 582.50     | -936.31    | 3.00                  | 3.00                 | 0.00                | 301.89  |                |
| 3,058.53            | 65.00           | 301.89      | 2,575.00            | 622.12     | -1,000.00  | 0.00                  | 0.00                 | 0.00                | 0.00    | EP(138H Pilot) |
| 3,496.28            | 65.00           | 301.89      | 2,760.00            | 831.69     | -1,336.87  | 0.00                  | 0.00                 | 0.00                | 0.00    | TD(138H Pilot) |



# Planning Report - Geographic



Database: EDM 5000.1 Single User Db  
Company: Hilcorp Energy Company  
Project: San Juan County, NM / CO (NAD 83)  
Site: Allison Unit Com #138H  
Well: Allison Unit Com #138H  
Wellbore: Pilot  
Design: Design #1

Local Co-ordinate Reference: Well Allison Unit Com #138H  
TVD Reference: rig @ 6149.00ft  
MD Reference: rig @ 6149.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude         | Longitude         |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|------------------|-------------------|
| 809.10              | 0.00            | 0.00        | 809.10              | 0.00       | 0.00       | 1,127,387.720       | 2,421,227.380      | 36° 59' 58.740 N | 107° 28' 54.901 W |
| 900.00              | 2.73            | 301.89      | 899.97              | 1.14       | -1.84      | 1,127,388.863       | 2,421,225.544      | 36° 59' 58.751 N | 107° 28' 54.924 W |
| 1,000.00            | 5.73            | 301.89      | 999.68              | 5.04       | -8.09      | 1,127,392.756       | 2,421,219.286      | 36° 59' 58.789 N | 107° 28' 55.002 W |
| 1,100.00            | 8.73            | 301.89      | 1,098.88            | 11.68      | -18.77     | 1,127,399.400       | 2,421,208.606      | 36° 59' 58.852 N | 107° 28' 55.136 W |
| 1,200.00            | 11.73           | 301.89      | 1,197.28            | 21.06      | -33.85     | 1,127,408.778       | 2,421,193.532      | 36° 59' 58.942 N | 107° 28' 55.324 W |
| 1,300.00            | 14.73           | 301.89      | 1,294.61            | 33.14      | -53.27     | 1,127,420.863       | 2,421,174.106      | 36° 59' 59.057 N | 107° 28' 55.566 W |
| 1,400.00            | 17.73           | 301.89      | 1,390.62            | 47.90      | -77.00     | 1,127,435.623       | 2,421,150.382      | 36° 59' 59.198 N | 107° 28' 55.863 W |
| 1,500.00            | 20.73           | 301.89      | 1,485.03            | 65.30      | -104.96    | 1,127,453.016       | 2,421,122.423      | 36° 59' 59.364 N | 107° 28' 56.212 W |
| 1,600.00            | 23.73           | 301.89      | 1,577.59            | 85.28      | -137.07    | 1,127,472.996       | 2,421,090.308      | 36° 59' 59.555 N | 107° 28' 56.613 W |
| 1,700.00            | 26.73           | 301.89      | 1,668.04            | 107.79     | -173.26    | 1,127,495.507       | 2,421,054.123      | 36° 59' 59.770 N | 107° 28' 57.065 W |
| 1,800.00            | 29.73           | 301.89      | 1,756.14            | 132.77     | -213.41    | 1,127,520.488       | 2,421,013.969      | 37° 0' 0.008 N   | 107° 28' 57.566 W |
| 1,900.00            | 32.73           | 301.89      | 1,841.64            | 160.15     | -257.43    | 1,127,547.870       | 2,420,969.954      | 37° 0' 0.269 N   | 107° 28' 58.116 W |
| 2,000.00            | 35.73           | 301.89      | 1,924.31            | 189.86     | -305.18    | 1,127,577.579       | 2,420,922.201      | 37° 0' 0.553 N   | 107° 28' 58.712 W |
| 2,100.00            | 38.73           | 301.89      | 2,003.93            | 221.81     | -356.54    | 1,127,609.532       | 2,420,870.839      | 37° 0' 0.858 N   | 107° 28' 59.353 W |
| 2,200.00            | 41.73           | 301.89      | 2,080.27            | 255.92     | -411.37    | 1,127,643.643       | 2,420,816.009      | 37° 0' 1.184 N   | 107° 29' 0.038 W  |
| 2,300.00            | 44.73           | 301.89      | 2,153.13            | 292.10     | -469.52    | 1,127,679.817       | 2,420,757.862      | 37° 0' 1.529 N   | 107° 29' 0.764 W  |
| 2,400.00            | 47.73           | 301.89      | 2,222.30            | 330.24     | -530.82    | 1,127,717.956       | 2,420,696.557      | 37° 0' 1.893 N   | 107° 29' 1.529 W  |
| 2,500.00            | 50.73           | 301.89      | 2,287.60            | 370.24     | -595.12    | 1,127,757.955       | 2,420,632.263      | 37° 0' 2.275 N   | 107° 29' 2.332 W  |
| 2,600.00            | 53.73           | 301.89      | 2,348.84            | 411.98     | -662.23    | 1,127,799.704       | 2,420,565.154      | 37° 0' 2.674 N   | 107° 29' 3.170 W  |
| 2,700.00            | 56.73           | 301.89      | 2,405.87            | 455.37     | -731.97    | 1,127,843.090       | 2,420,495.416      | 37° 0' 3.088 N   | 107° 29' 4.041 W  |
| 2,800.00            | 59.73           | 301.89      | 2,458.52            | 500.27     | -804.14    | 1,127,887.992       | 2,420,423.239      | 37° 0' 3.517 N   | 107° 29' 4.942 W  |
| 2,900.00            | 62.73           | 301.89      | 2,506.65            | 546.57     | -878.56    | 1,127,934.289       | 2,420,348.822      | 37° 0' 3.959 N   | 107° 29' 5.872 W  |
| 2,975.77            | 65.00           | 301.89      | 2,540.02            | 582.50     | -936.31    | 1,127,970.218       | 2,420,291.069      | 37° 0' 4.302 N   | 107° 29' 6.593 W  |
| 3,000.00            | 65.00           | 301.89      | 2,550.26            | 594.10     | -954.96    | 1,127,981.819       | 2,420,272.423      | 37° 0' 4.412 N   | 107° 29' 6.826 W  |
| 3,058.53            | 65.00           | 301.89      | 2,575.00            | 622.12     | -1,000.00  | 1,128,009.840       | 2,420,227.380      | 37° 0' 4.680 N   | 107° 29' 7.388 W  |
| EP(138H Pilot)      |                 |             |                     |            |            |                     |                    |                  |                   |
| 3,100.00            | 65.00           | 301.89      | 2,592.53            | 641.97     | -1,031.91  | 1,128,029.693       | 2,420,195.469      | 37° 0' 4.870 N   | 107° 29' 7.787 W  |
| 3,200.00            | 65.00           | 301.89      | 2,634.79            | 689.85     | -1,108.87  | 1,128,077.568       | 2,420,118.515      | 37° 0' 5.327 N   | 107° 29' 8.748 W  |
| 3,300.00            | 65.00           | 301.89      | 2,677.05            | 737.72     | -1,185.82  | 1,128,125.442       | 2,420,041.561      | 37° 0' 5.784 N   | 107° 29' 9.708 W  |
| 3,400.00            | 65.00           | 301.89      | 2,719.31            | 785.60     | -1,262.78  | 1,128,173.317       | 2,419,964.607      | 37° 0' 6.241 N   | 107° 29' 10.669 W |
| 3,496.28            | 65.00           | 301.89      | 2,760.00            | 831.69     | -1,336.87  | 1,128,219.410       | 2,419,890.516      | 37° 0' 6.681 N   | 107° 29' 11.595 W |
| 7" - TD(138H Pilot) |                 |             |                     |            |            |                     |                    |                  |                   |

## Design Targets

| Target Name<br>- hit/miss target<br>- Shape            | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude       | Longitude         |
|--------------------------------------------------------|---------------|--------------|----------|------------|------------|-----------------|----------------|----------------|-------------------|
| EP(138H Pilot)<br>- plan hits target center<br>- Point | 0.00          | 360.00       | 2,575.00 | 622.12     | -1,000.00  | 1,128,009.840   | 2,420,227.380  | 37° 0' 4.680 N | 107° 29' 7.388 W  |
| TD(138H Pilot)<br>- plan hits target center<br>- Point | 0.00          | 360.00       | 2,760.00 | 831.69     | -1,336.87  | 1,128,219.409   | 2,419,890.513  | 37° 0' 6.681 N | 107° 29' 11.595 W |

## Casing Points

| Measured Depth (ft) | Vertical Depth (ft) | Name   | Casing Diameter (in) | Hole Diameter (in) |
|---------------------|---------------------|--------|----------------------|--------------------|
| 500.00              | 500.00              | 9 5/8" | 9.625                | 12.250             |
| 3,496.28            | 2,760.00            | 7"     | 7.000                | 7.500              |



## Planning Report - Geographic



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Pilot                             |                              |                             |
| Design:   | Design #1                         |                              |                             |



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Pilot

Design #1

## **Anticollision Report**

23 January, 2018





# Anticollision Report



|                           |                                   |                                     |                             |
|---------------------------|-----------------------------------|-------------------------------------|-----------------------------|
| <b>Company:</b>           | Hilcorp Energy Company            | <b>Local Co-ordinate Reference:</b> | Well Allison Unit Com #138H |
| <b>Project:</b>           | San Juan County, NM / CO (NAD 83) | <b>TVD Reference:</b>               | rig @ 6149.00ft             |
| <b>Reference Site:</b>    | Allison Unit Com #138H            | <b>MD Reference:</b>                | rig @ 6149.00ft             |
| <b>Site Error:</b>        | 0.00 ft                           | <b>North Reference:</b>             | Grid                        |
| <b>Reference Well:</b>    | Allison Unit Com #138H            | <b>Survey Calculation Method:</b>   | Minimum Curvature           |
| <b>Well Error:</b>        | 0.00 ft                           | <b>Output errors are at</b>         | 2.00 sigma                  |
| <b>Reference Wellbore</b> | Pilot                             | <b>Database:</b>                    | EDM 5000.1 Single User Db   |
| <b>Reference Design:</b>  | Design #1                         | <b>Offset TVD Reference:</b>        | Offset Datum                |

|                                     |                                                                     |
|-------------------------------------|---------------------------------------------------------------------|
| <b>Reference</b>                    | Design #1                                                           |
| <b>Filter type:</b>                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |
| <b>Interpolation Method:</b>        | MD Interval 100.00ft                                                |
| <b>Depth Range:</b>                 | Unlimited                                                           |
| <b>Results Limited by:</b>          | Maximum center-center distance of 1,307.29 ft                       |
| <b>Warning Levels Evaluated at:</b> | 2.00 Sigma                                                          |
| <b>Error Model:</b>                 | ISCWSA                                                              |
| <b>Scan Method:</b>                 | Closest Approach 3D                                                 |
| <b>Error Surface:</b>               | Elliptical Conic                                                    |
| <b>Casing Method:</b>               | Not applied                                                         |

|                            |                |                          |
|----------------------------|----------------|--------------------------|
| <b>Survey Tool Program</b> | <b>Date</b>    | 1/23/2018                |
| <b>From (ft)</b>           | <b>To (ft)</b> | <b>Survey (Wellbore)</b> |
| 0.00                       | 3,496.28       | Design #1 (Pilot)        |
|                            |                | <b>Tool Name</b>         |
|                            |                | MWD                      |
|                            |                | <b>Description</b>       |
|                            |                | MWD - Standard           |

| Summary                                                |           |          |          |          |            |              |
|--------------------------------------------------------|-----------|----------|----------|----------|------------|--------------|
| Site Name                                              | Reference | Offset   | Distance |          | Separation | Warning      |
|                                                        | Measured  | Measured | Between  | Between  |            |              |
| Offset Well - Wellbore - Design                        | Depth     | Depth    | Centres  | Ellipses | Factor     |              |
| (ft) (ft) (ft) (ft)                                    |           |          |          |          |            |              |
| Allison Unit Com Offsets                               |           |          |          |          |            |              |
| Allison UN #047B - Allison UN #047B - Allison UN #047B | 800.00    | 800.00   | 557.77   | 552.95   | 115.604    | CC, ES       |
| Allison UN #047B - Allison UN #047B - Allison UN #047B | 2,200.00  | 2,080.27 | 908.42   | 893.47   | 60.754     | SF           |
| Allison UN #063 - Allison UN #063 - Wellbore #1        |           |          |          |          |            | Out of range |
| Allison UN Com #138 - Allison UN Com #138 - Allison UN |           |          |          |          |            | Out of range |
| Dufour 32-6-22-2 - Dufour 32-6-22-2 - Dufour 32-6-22-2 |           |          |          |          |            | Out of range |
| Dufour 32-6-23-2 - Dufour 32-6-23-2 - Dufour 32-6-23-2 |           |          |          |          |            | Out of range |

|                            |                                                                                   |                            |                            |                       |                    |                              |                                          |                          |                             |                              |                                |                          |
|----------------------------|-----------------------------------------------------------------------------------|----------------------------|----------------------------|-----------------------|--------------------|------------------------------|------------------------------------------|--------------------------|-----------------------------|------------------------------|--------------------------------|--------------------------|
| <b>Offset Design</b>       | Allison Unit Com Offsets - Allison UN #047B - Allison UN #047B - Allison UN #047B |                            |                            |                       |                    |                              |                                          |                          |                             |                              | <b>Offset Site Error:</b>      | 0.00 ft                  |
| <b>Survey Program:</b>     | 2760-MWD                                                                          |                            |                            |                       |                    |                              |                                          |                          |                             |                              | <b>Offset Well Error:</b>      | 0.00 ft                  |
| <b>Reference</b>           | <b>Offset</b>                                                                     | <b>Semi Major Axis</b>     |                            | <b>Distance</b>       |                    | <b>Minimum Separation</b>    |                                          | <b>Separation Factor</b> |                             | <b>Warning</b>               |                                |                          |
| <b>Measured Depth (ft)</b> | <b>Vertical Depth (ft)</b>                                                        | <b>Measured Depth (ft)</b> | <b>Vertical Depth (ft)</b> | <b>Reference (ft)</b> | <b>Offset (ft)</b> | <b>Highside Toolface (°)</b> | <b>Offset Wellbore Centre +N/-S (ft)</b> | <b>+E/-W (ft)</b>        | <b>Between Centres (ft)</b> | <b>Between Ellipses (ft)</b> | <b>Minimum Separation (ft)</b> | <b>Separation Factor</b> |
| 0.00                       | 0.00                                                                              | 0.00                       | 0.00                       | 0.00                  | 0.00               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      |                              |                                |                          |
| 100.00                     | 100.00                                                                            | 100.00                     | 100.00                     | 0.18                  | 0.21               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 557.38                       | 0.39                           | 1,429.348                |
| 200.00                     | 200.00                                                                            | 200.00                     | 200.00                     | 0.60                  | 0.42               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 556.75                       | 1.02                           | 544.835                  |
| 300.00                     | 300.00                                                                            | 300.00                     | 300.00                     | 1.03                  | 0.63               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 556.11                       | 1.66                           | 336.562                  |
| 400.00                     | 400.00                                                                            | 400.00                     | 400.00                     | 1.45                  | 0.84               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 555.48                       | 2.29                           | 243.486                  |
| 500.00                     | 500.00                                                                            | 500.00                     | 500.00                     | 1.87                  | 1.05               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 554.85                       | 2.92                           | 190.737                  |
| 600.00                     | 600.00                                                                            | 600.00                     | 600.00                     | 2.30                  | 1.26               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 554.21                       | 3.56                           | 156.774                  |
| 700.00                     | 700.00                                                                            | 700.00                     | 700.00                     | 2.72                  | 1.47               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 553.58                       | 4.19                           | 133.078                  |
| 800.00                     | 800.00                                                                            | 800.00                     | 800.00                     | 3.14                  | 1.68               | -179.24                      | -557.72                                  | -7.38                    | 557.77                      | 552.95                       | 4.82                           | 115.604 CC, ES           |
| 900.00                     | 899.97                                                                            | 899.97                     | 899.97                     | 3.44                  | 1.89               | -121.29                      | -557.72                                  | -7.38                    | 558.89                      | 553.56                       | 5.33                           | 104.872                  |
| 1,000.00                   | 999.68                                                                            | 999.68                     | 999.68                     | 3.62                  | 2.10               | -121.83                      | -557.72                                  | -7.38                    | 562.76                      | 557.04                       | 5.72                           | 98.427                   |
| 1,100.00                   | 1,098.88                                                                          | 1,098.88                   | 1,098.88                   | 3.85                  | 2.31               | -122.73                      | -557.72                                  | -7.38                    | 569.52                      | 563.35                       | 6.16                           | 92.403                   |
| 1,200.00                   | 1,197.28                                                                          | 1,197.28                   | 1,197.28                   | 4.17                  | 2.52               | -123.94                      | -557.72                                  | -7.38                    | 579.38                      | 572.71                       | 6.68                           | 86.796                   |
| 1,300.00                   | 1,294.61                                                                          | 1,294.61                   | 1,294.61                   | 4.60                  | 2.72               | -125.42                      | -557.72                                  | -7.38                    | 592.64                      | 585.38                       | 7.26                           | 81.620                   |
| 1,400.00                   | 1,390.62                                                                          | 1,390.62                   | 1,390.62                   | 5.15                  | 2.93               | -127.09                      | -557.72                                  | -7.38                    | 609.61                      | 601.69                       | 7.92                           | 76.926                   |
| 1,500.00                   | 1,485.03                                                                          | 1,485.03                   | 1,485.03                   | 5.84                  | 3.12               | -128.90                      | -557.72                                  | -7.38                    | 630.61                      | 621.95                       | 8.66                           | 72.783                   |
| 1,600.00                   | 1,577.59                                                                          | 1,577.59                   | 1,577.59                   | 6.70                  | 3.32               | -130.77                      | -557.72                                  | -7.38                    | 655.95                      | 646.47                       | 9.47                           | 69.253                   |
| 1,700.00                   | 1,668.04                                                                          | 1,668.04                   | 1,668.04                   | 7.73                  | 3.51               | -132.65                      | -557.72                                  | -7.38                    | 685.87                      | 675.53                       | 10.33                          | 66.366                   |
| 1,800.00                   | 1,756.14                                                                          | 1,756.14                   | 1,756.14                   | 8.93                  | 3.70               | -134.47                      | -557.72                                  | -7.38                    | 720.57                      | 709.33                       | 11.24                          | 64.122                   |
| 1,900.00                   | 1,841.64                                                                          | 1,841.64                   | 1,841.64                   | 10.32                 | 3.87               | -136.18                      | -557.72                                  | -7.38                    | 760.17                      | 748.01                       | 12.16                          | 62.490                   |
| 2,000.00                   | 1,924.31                                                                          | 1,924.31                   | 1,924.31                   | 11.89                 | 4.05               | -137.76                      | -557.72                                  | -7.38                    | 804.71                      | 791.61                       | 13.10                          | 61.422                   |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Anticollision Report



|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Pilot                             | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

| Offset Design Allison Unit Com Offsets - Allison UN #047B - Allison UN #047B - Allison UN #047B |                     |                     |                     |                 |             |                       |                                   |            |                      |                       |                         |                   | Offset Site Error: | 0.00 ft |
|-------------------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|-------------------|--------------------|---------|
| Survey Program: 2760-MWD                                                                        |                     |                     |                     |                 |             |                       |                                   |            |                      |                       |                         |                   | Offset Well Error: | 0.00 ft |
| Reference                                                                                       |                     | Offset              |                     | Semi Major Axis |             |                       | Distance                          |            |                      |                       |                         |                   | Warning            |         |
| Measured Depth (ft)                                                                             | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft)  | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor |                    |         |
| 2,100.00                                                                                        | 2,003.93            | 2,003.93            | 2,003.93            | 13.65           | 4.22        | -139.17               | -557.72                           | -7.38      | 854.16               | 840.12                | 14.03                   | 60.862            |                    |         |
| 2,200.00                                                                                        | 2,080.27            | 2,080.27            | 2,080.27            | 15.60           | 4.38        | -140.38               | -557.72                           | -7.38      | 908.42               | 893.47                | 14.95                   | 60.754 SF         |                    |         |
| 2,300.00                                                                                        | 2,153.13            | 2,153.13            | 2,153.13            | 17.73           | 4.53        | -141.38               | -557.72                           | -7.38      | 967.35               | 951.50                | 15.85                   | 61.043            |                    |         |
| 2,400.00                                                                                        | 2,222.30            | 2,222.30            | 2,222.30            | 20.05           | 4.68        | -142.15               | -557.72                           | -7.38      | 1,030.76             | 1,014.05              | 16.71                   | 61.681            |                    |         |
| 2,500.00                                                                                        | 2,287.60            | 2,287.60            | 2,287.60            | 22.54           | 4.81        | -142.68               | -557.72                           | -7.38      | 1,098.43             | 1,080.89              | 17.54                   | 62.626            |                    |         |
| 2,600.00                                                                                        | 2,348.84            | 2,348.84            | 2,348.84            | 25.21           | 4.94        | -142.93               | -557.72                           | -7.38      | 1,170.11             | 1,151.78              | 18.33                   | 63.842            |                    |         |
| 2,700.00                                                                                        | 2,405.87            | 2,405.87            | 2,405.87            | 28.04           | 5.06        | -142.89               | -557.72                           | -7.38      | 1,245.54             | 1,226.47              | 19.07                   | 65.301            |                    |         |



## Anticollision Report

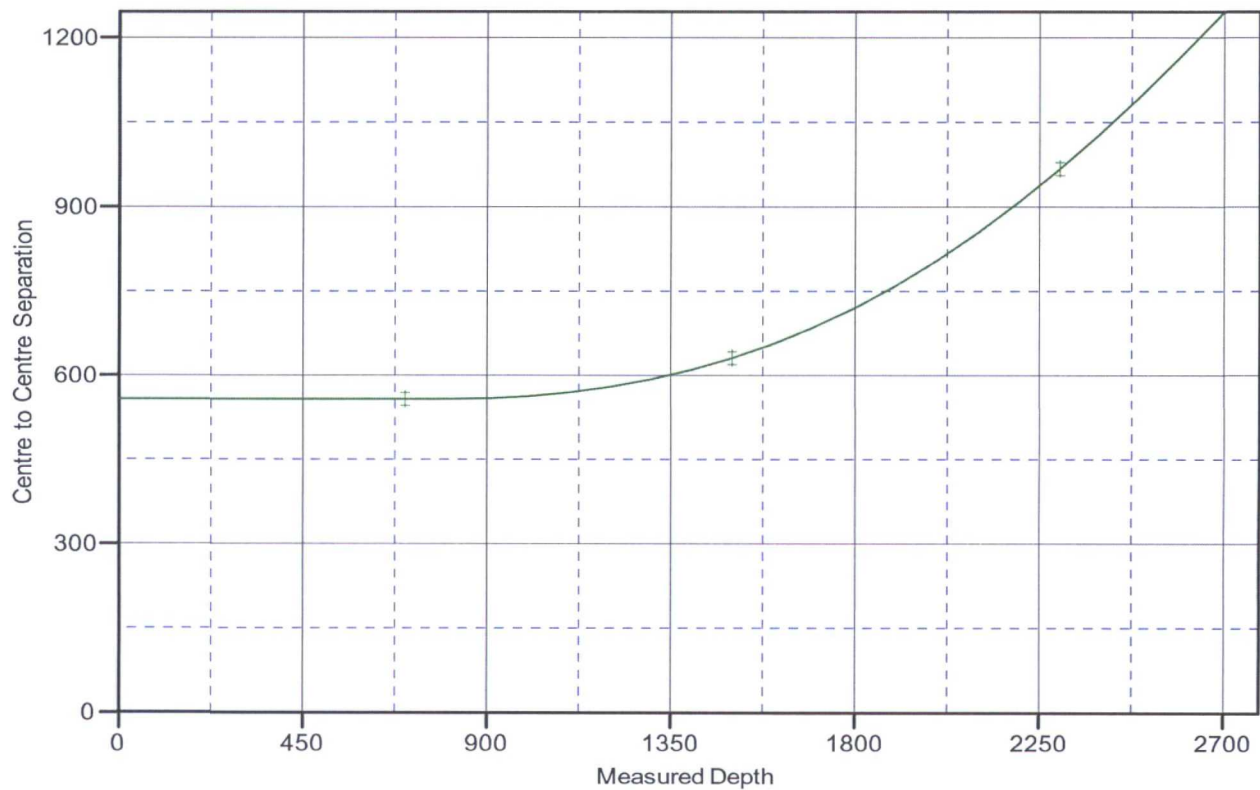


|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Pilot                             | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

Reference Depths are relative to rig @ 6149.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H  
Coordinate System is US State Plane 1983, Colorado Southern Zone  
Grid Convergence at Surface is: -1.22°

### Ladder Plot



### LEGEND

JN #047B, Allison UN #047B, Allison UN #047B V0



## Anticollision Report

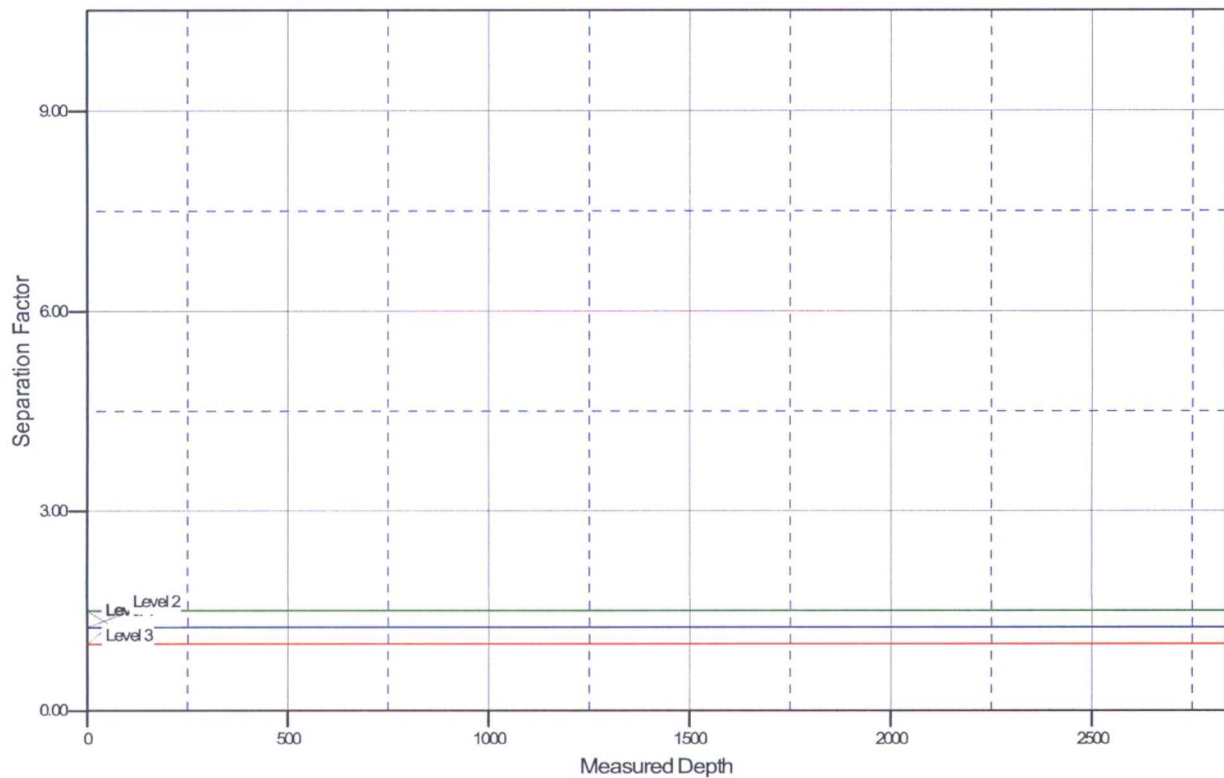


|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Pilot                             | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

Reference Depths are relative to rig @ 6149.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H  
Coordinate System is US State Plane 1983, Colorado Southern Zone  
Grid Convergence at Surface is: -1.22°

### Separation Factor Plot



### LEGEND

JN #047B, Allison UN #047B, Allison UN #047B V0



**HILCORP ENERGY COMPANY**  
**ALLISON UNIT COM #138H (HORZ)**  
**SAN JUAN BASIN NM / CO**  
**6134' GL + 15' KB**



WELL DETAILS: Allison Unit Com #138H

| +N/-S | +E/-W | Northing    | Ground Level: | Easting     | Latitude         | Longitude         |
|-------|-------|-------------|---------------|-------------|------------------|-------------------|
| 0.00  | 0.00  | 1127387.720 | 6134.00       | 2421227.380 | 36° 59' 58.740 N | 107° 28' 54.901 W |

PROJECT DETAILS: San Juan County, NM / CO (NAD 83)

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Southern Zone

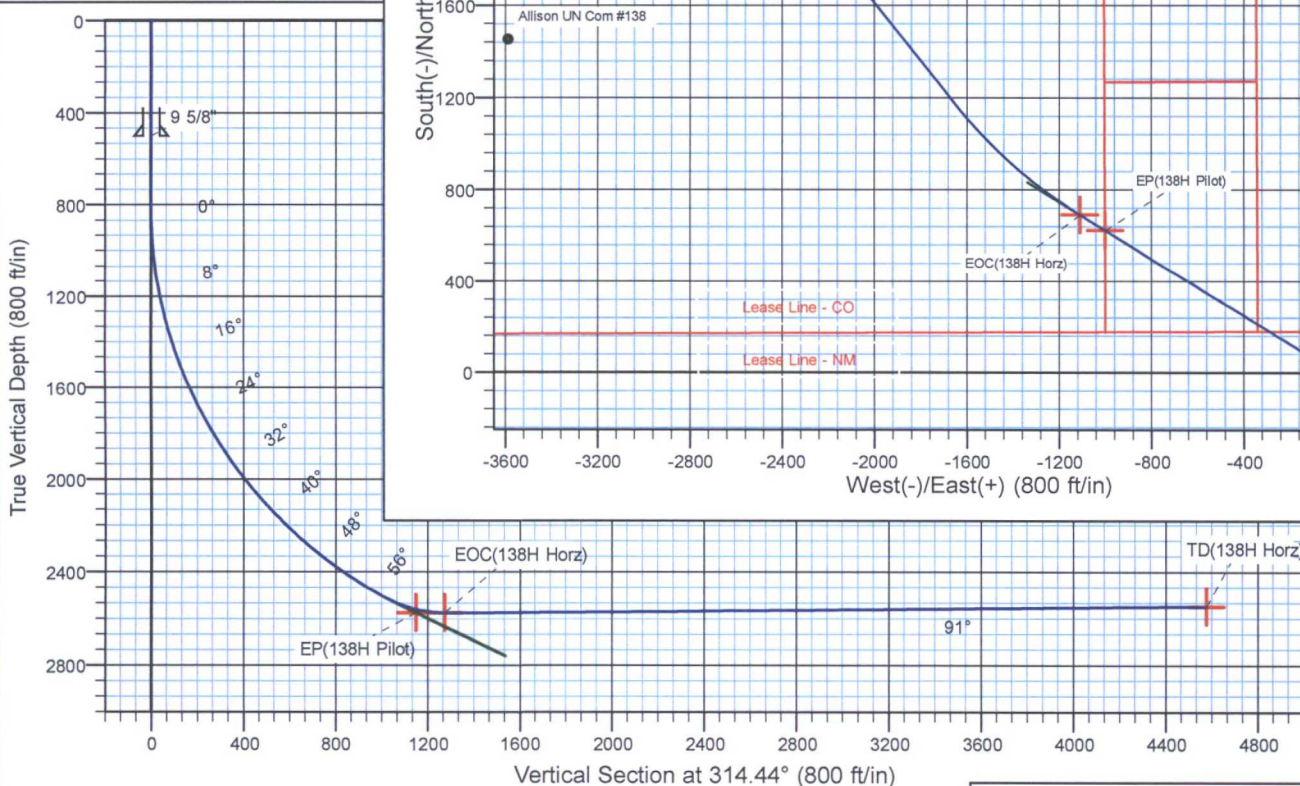
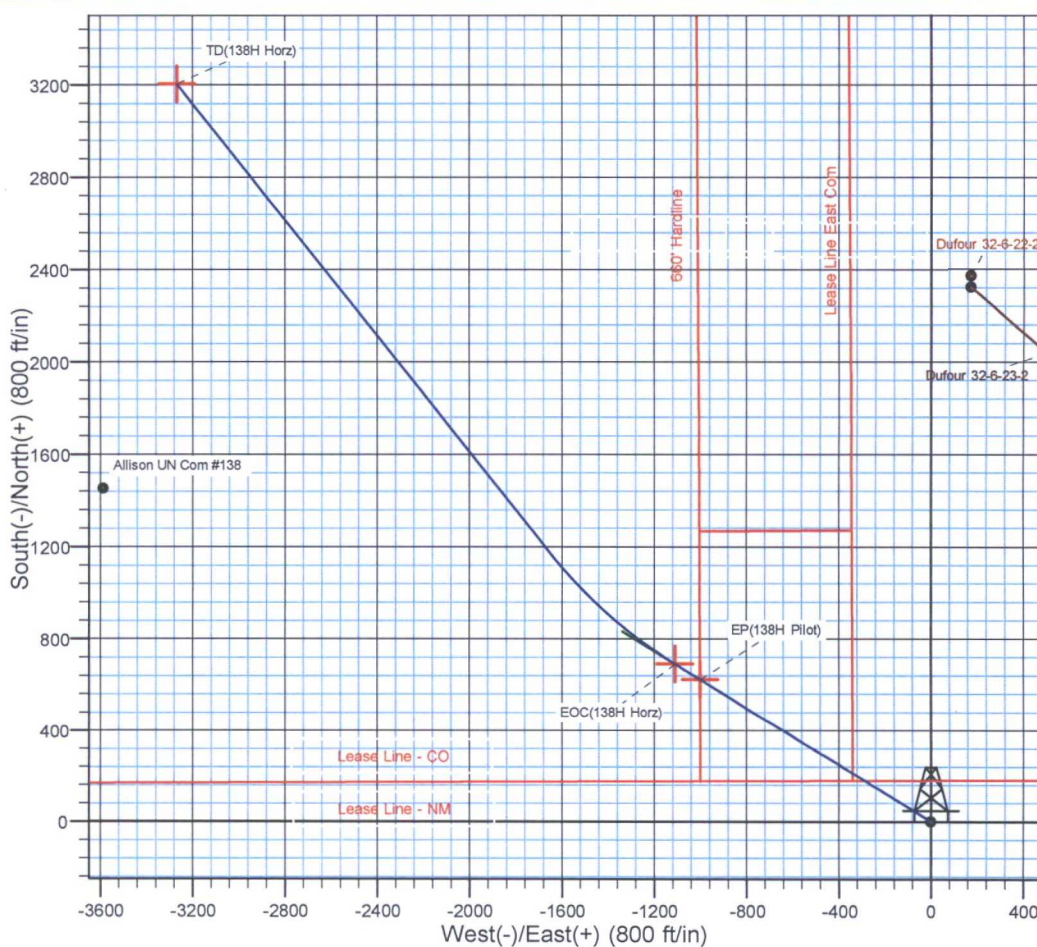
System Datum: Mean Sea Level

SECTION DETAILS

| Sec | MD      | Inc   | Azi    | TVD     | +N/-S   | +E/-W    | Dleg  | TFace | VSec    | Target        |
|-----|---------|-------|--------|---------|---------|----------|-------|-------|---------|---------------|
| 1   | 2914.70 | 63.17 | 301.89 | 2513.33 | 553.49  | -889.68  | 0.00  | 0.00  | 1022.75 |               |
| 2   | 3182.92 | 90.00 | 301.89 | 2575.00 | 690.06  | -1109.19 | 10.00 | 0.01  | 1275.11 |               |
| 3   | 3905.58 | 90.52 | 321.47 | 2571.68 | 1168.24 | -1646.30 | 2.71  | 88.44 | 1993.40 |               |
| 4   | 6507.90 | 90.52 | 321.47 | 2548.00 | 3203.83 | -3267.38 | 0.00  | 0.00  | 4576.05 | TD(138H Horz) |

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

| Name           | TVD     | +N/-S   | +E/-W    | Northing    | Easting     | Latitude        | Longitude         | Shape |
|----------------|---------|---------|----------|-------------|-------------|-----------------|-------------------|-------|
| TD(138H Horz)  | 2548.00 | 3203.83 | -3267.38 | 1130591.540 | 2417960.010 | 37° 0' 29.722 N | 107° 29' 36.011 W | Point |
| EOC(138H Horz) | 2575.00 | 690.06  | -1109.19 | 1128077.779 | 2420118.192 | 37° 0' 5.329 N  | 107° 29' 8.752 W  | Point |
| EP(138H Pilot) | 2575.00 | 622.12  | -1000.00 | 1128009.840 | 2420227.380 | 37° 0' 4.680 N  | 107° 29' 7.388 W  | Point |



Allison Unit Com #138H Horz p1

Created By: Frank Scardino Date: 1/22/2018  
 Checked: \_\_\_\_\_ Date: \_\_\_\_\_



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Horz

Plan: Design #1

## **Standard Planning Report**

22 January, 2018





# Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Horz                              |                              |                             |
| Design:   | Design #1                         |                              |                             |

|             |                                   |               |                |
|-------------|-----------------------------------|---------------|----------------|
| Project     | San Juan County, NM / CO (NAD 83) |               |                |
| Map System: | US State Plane 1983               | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983         |               |                |
| Map Zone:   | Colorado Southern Zone            |               |                |

|                       |                        |                   |                    |
|-----------------------|------------------------|-------------------|--------------------|
| Site                  | Allison Unit Com #138H |                   |                    |
| Site Position:        |                        | Northing:         | 1,127,387.720 usft |
| From:                 | Map                    | Easting:          | 2,421,227.380 usft |
| Position Uncertainty: | 0.00 ft                | Slot Radius:      | 13.200 in          |
|                       |                        | Latitude:         | 36° 59' 58.740 N   |
|                       |                        | Longitude:        | 107° 28' 54.901 W  |
|                       |                        | Grid Convergence: | -1.22 °            |

|                      |                        |                     |                   |
|----------------------|------------------------|---------------------|-------------------|
| Well                 | Allison Unit Com #138H |                     |                   |
| Well Position        | +N/-S                  | 0.00 ft             | Northing:         |
|                      | +E/-W                  | 0.00 ft             | Easting:          |
| Position Uncertainty | 0.00 ft                | Wellhead Elevation: | 0.00 ft           |
|                      |                        | Latitude:           | 36° 59' 58.740 N  |
|                      |                        | Longitude:          | 107° 28' 54.901 W |
|                      |                        | Ground Level:       | 6,134.00 ft       |

|           |            |             |                     |
|-----------|------------|-------------|---------------------|
| Wellbore  | Horz       |             |                     |
| Magnetics | Model Name | Sample Date | Declination (°)     |
|           | IGRF2015   | 1/22/2018   | 9.11                |
|           |            |             | Dip Angle (°)       |
|           |            |             | 63.60               |
|           |            |             | Field Strength (nT) |
|           |            |             | 50,155              |

|                   |                  |       |               |
|-------------------|------------------|-------|---------------|
| Design            | Design #1        |       |               |
| Audit Notes:      |                  |       |               |
| Version:          | Phase:           | PLAN  | Tie On Depth: |
|                   |                  |       | 2,914.70      |
| Vertical Section: | Depth From (TVD) | +N/-S | +E/-W         |
|                   | (ft)             | (ft)  | (ft)          |
|                   | 0.00             | 0.00  | 0.00          |
|                   |                  |       | Direction (°) |
|                   |                  |       | 314.44        |

|               |             |         |          |          |           |           |           |           |       |               |
|---------------|-------------|---------|----------|----------|-----------|-----------|-----------|-----------|-------|---------------|
| Plan Sections |             |         |          |          |           |           |           |           |       |               |
| Measured      | Inclination | Azimuth | Vertical | +N/-S    | +E/-W     | Dogleg    | Build     | Turn      | TFO   | Target        |
| Depth         | (°)         | (°)     | Depth    | (ft)     | (ft)      | Rate      | Rate      | Rate      | (°)   |               |
| (ft)          |             |         | (ft)     |          |           | (°/100ft) | (°/100ft) | (°/100ft) |       |               |
| 2,914.70      | 63.17       | 301.89  | 2,513.33 | 553.49   | -889.68   | 0.00      | 0.00      | 0.00      | 0.00  |               |
| 3,182.92      | 90.00       | 301.89  | 2,575.00 | 690.06   | -1,109.19 | 10.00     | 10.00     | 0.00      | 0.01  |               |
| 3,905.58      | 90.52       | 321.47  | 2,571.68 | 1,168.24 | -1,646.30 | 2.71      | 0.07      | 2.71      | 88.44 |               |
| 6,507.90      | 90.52       | 321.47  | 2,548.00 | 3,203.83 | -3,267.38 | 0.00      | 0.00      | 0.00      | 0.00  | TD(138H Horz) |



# Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Horz                              |                              |                             |
| Design:   | Design #1                         |                              |                             |

## Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|-----------------------|----------------------|---------------------|
| 2,914.70            | 63.17           | 301.89      | 2,513.33            | 553.49     | -889.68    | 1,022.75              | 3.00                  | 3.00                 | 0.00                |
| 2,950.00            | 66.70           | 301.89      | 2,528.29            | 570.37     | -916.82    | 1,053.96              | 10.00                 | 10.00                | 0.00                |
| 3,000.00            | 71.70           | 301.89      | 2,546.04            | 595.06     | -956.50    | 1,099.57              | 10.00                 | 10.00                | 0.00                |
| 3,050.00            | 76.70           | 301.89      | 2,559.64            | 620.46     | -997.33    | 1,146.52              | 10.00                 | 10.00                | 0.00                |
| 3,055.96            | 77.30           | 301.89      | 2,560.99            | 623.53     | -1,002.27  | 1,152.19              | 10.00                 | 10.00                | 0.00                |
| EP(138H Pilot)      |                 |             |                     |            |            |                       |                       |                      |                     |
| 3,100.00            | 81.70           | 301.89      | 2,569.01            | 646.40     | -1,039.02  | 1,194.44              | 10.00                 | 10.00                | 0.00                |
| 3,150.00            | 86.71           | 301.89      | 2,574.05            | 672.67     | -1,081.25  | 1,242.98              | 10.00                 | 10.00                | 0.00                |
| 3,182.92            | 90.00           | 301.89      | 2,575.00            | 690.06     | -1,109.19  | 1,275.11              | 10.00                 | 10.00                | 0.00                |
| 3,200.00            | 90.01           | 302.35      | 2,575.00            | 699.14     | -1,123.65  | 1,291.79              | 2.71                  | 0.07                 | 2.71                |
| 3,300.00            | 90.09           | 305.06      | 2,574.91            | 754.63     | -1,206.83  | 1,390.03              | 2.71                  | 0.07                 | 2.71                |
| 3,400.00            | 90.16           | 307.77      | 2,574.70            | 813.98     | -1,287.29  | 1,489.04              | 2.71                  | 0.07                 | 2.71                |
| 3,500.00            | 90.23           | 310.48      | 2,574.36            | 877.08     | -1,364.86  | 1,588.60              | 2.71                  | 0.07                 | 2.71                |
| 3,600.00            | 90.30           | 313.19      | 2,573.89            | 943.77     | -1,439.36  | 1,688.49              | 2.71                  | 0.07                 | 2.71                |
| 3,700.00            | 90.38           | 315.90      | 2,573.29            | 1,013.91   | -1,510.63  | 1,788.48              | 2.71                  | 0.07                 | 2.71                |
| 3,800.00            | 90.45           | 318.61      | 2,572.57            | 1,087.33   | -1,578.50  | 1,888.35              | 2.71                  | 0.07                 | 2.71                |
| 3,905.58            | 90.52           | 321.47      | 2,571.68            | 1,168.24   | -1,646.30  | 1,993.40              | 2.71                  | 0.07                 | 2.71                |
| 4,000.00            | 90.52           | 321.47      | 2,570.82            | 1,242.10   | -1,705.12  | 2,087.11              | 0.00                  | 0.00                 | 0.00                |
| 4,100.00            | 90.52           | 321.47      | 2,569.91            | 1,320.32   | -1,767.41  | 2,186.36              | 0.00                  | 0.00                 | 0.00                |
| 4,200.00            | 90.52           | 321.47      | 2,569.00            | 1,398.55   | -1,829.70  | 2,285.60              | 0.00                  | 0.00                 | 0.00                |
| 4,300.00            | 90.52           | 321.47      | 2,568.09            | 1,476.77   | -1,892.00  | 2,384.85              | 0.00                  | 0.00                 | 0.00                |
| 4,400.00            | 90.52           | 321.47      | 2,567.18            | 1,554.99   | -1,954.29  | 2,484.09              | 0.00                  | 0.00                 | 0.00                |
| 4,500.00            | 90.52           | 321.47      | 2,566.27            | 1,633.21   | -2,016.59  | 2,583.33              | 0.00                  | 0.00                 | 0.00                |
| 4,600.00            | 90.52           | 321.47      | 2,565.36            | 1,711.43   | -2,078.88  | 2,682.58              | 0.00                  | 0.00                 | 0.00                |
| 4,700.00            | 90.52           | 321.47      | 2,564.45            | 1,789.66   | -2,141.17  | 2,781.82              | 0.00                  | 0.00                 | 0.00                |
| 4,800.00            | 90.52           | 321.47      | 2,563.54            | 1,867.88   | -2,203.47  | 2,881.07              | 0.00                  | 0.00                 | 0.00                |
| 4,900.00            | 90.52           | 321.47      | 2,562.63            | 1,946.10   | -2,265.76  | 2,980.31              | 0.00                  | 0.00                 | 0.00                |
| 5,000.00            | 90.52           | 321.47      | 2,561.72            | 2,024.32   | -2,328.05  | 3,079.55              | 0.00                  | 0.00                 | 0.00                |
| 5,100.00            | 90.52           | 321.47      | 2,560.81            | 2,102.54   | -2,390.35  | 3,178.80              | 0.00                  | 0.00                 | 0.00                |
| 5,200.00            | 90.52           | 321.47      | 2,559.90            | 2,180.77   | -2,452.64  | 3,278.04              | 0.00                  | 0.00                 | 0.00                |
| 5,300.00            | 90.52           | 321.47      | 2,558.99            | 2,258.99   | -2,514.93  | 3,377.29              | 0.00                  | 0.00                 | 0.00                |
| 5,400.00            | 90.52           | 321.47      | 2,558.08            | 2,337.21   | -2,577.23  | 3,476.53              | 0.00                  | 0.00                 | 0.00                |
| 5,500.00            | 90.52           | 321.47      | 2,557.17            | 2,415.43   | -2,639.52  | 3,575.78              | 0.00                  | 0.00                 | 0.00                |
| 5,600.00            | 90.52           | 321.47      | 2,556.26            | 2,493.65   | -2,701.82  | 3,675.02              | 0.00                  | 0.00                 | 0.00                |
| 5,700.00            | 90.52           | 321.47      | 2,555.35            | 2,571.88   | -2,764.11  | 3,774.26              | 0.00                  | 0.00                 | 0.00                |
| 5,800.00            | 90.52           | 321.47      | 2,554.44            | 2,650.10   | -2,826.40  | 3,873.51              | 0.00                  | 0.00                 | 0.00                |
| 5,900.00            | 90.52           | 321.47      | 2,553.53            | 2,728.32   | -2,888.70  | 3,972.75              | 0.00                  | 0.00                 | 0.00                |
| 6,000.00            | 90.52           | 321.47      | 2,552.62            | 2,806.54   | -2,950.99  | 4,072.00              | 0.00                  | 0.00                 | 0.00                |
| 6,100.00            | 90.52           | 321.47      | 2,551.71            | 2,884.76   | -3,013.28  | 4,171.24              | 0.00                  | 0.00                 | 0.00                |
| 6,200.00            | 90.52           | 321.47      | 2,550.80            | 2,962.98   | -3,075.58  | 4,270.48              | 0.00                  | 0.00                 | 0.00                |
| 6,300.00            | 90.52           | 321.47      | 2,549.89            | 3,041.21   | -3,137.87  | 4,369.73              | 0.00                  | 0.00                 | 0.00                |
| 6,400.00            | 90.52           | 321.47      | 2,548.98            | 3,119.43   | -3,200.16  | 4,468.97              | 0.00                  | 0.00                 | 0.00                |
| 6,507.90            | 90.52           | 321.47      | 2,548.00            | 3,203.83   | -3,267.38  | 4,576.05              | 0.00                  | 0.00                 | 0.00                |
| TD(138H Horz)       |                 |             |                     |            |            |                       |                       |                      |                     |



# Planning Report



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Horz                              |                              |                             |
| Design:   | Design #1                         |                              |                             |

## Design Targets

| Target Name                                                                                | Dip Angle | Dip Dir. | TVD      | +N/-S    | +E/-W     | Northing      | Easting       | Latitude        | Longitude         |
|--------------------------------------------------------------------------------------------|-----------|----------|----------|----------|-----------|---------------|---------------|-----------------|-------------------|
| - hit/miss target                                                                          | (°)       | (°)      | (ft)     | (ft)     | (ft)      | (usft)        | (usft)        |                 |                   |
| - Shape                                                                                    |           |          |          |          |           |               |               |                 |                   |
| TD(138H Horz)                                                                              | 0.00      | 360.00   | 2,548.00 | 3,203.83 | -3,267.38 | 1,130,591.540 | 2,417,960.010 | 37° 0' 29.722 N | 107° 29' 36.011 W |
| - plan hits target center                                                                  |           |          |          |          |           |               |               |                 |                   |
| - Point                                                                                    |           |          |          |          |           |               |               |                 |                   |
| EP(138H Pilot)                                                                             | 0.00      | 360.00   | 2,575.00 | 622.12   | -1,000.00 | 1,128,009.840 | 2,420,227.380 | 37° 0' 4.680 N  | 107° 29' 7.388 W  |
| - plan misses target center by 14.27ft at 3055.96ft MD (2560.99 TVD, 623.53 N, -1002.27 E) |           |          |          |          |           |               |               |                 |                   |
| - Point                                                                                    |           |          |          |          |           |               |               |                 |                   |

## Casing Points

| Measured Depth | Vertical Depth | Name   | Casing Diameter | Hole Diameter |
|----------------|----------------|--------|-----------------|---------------|
| (ft)           | (ft)           |        | (in)            | (in)          |
| 500.00         | 500.00         | 9 5/8" | 9.625           | 12.250        |



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Horz

Plan: Design #1

## **Standard Planning Report - Geographic**

22 January, 2018





## Planning Report - Geographic



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Horz                              |                              |                             |
| Design:   | Design #1                         |                              |                             |

|             |                                   |               |                |
|-------------|-----------------------------------|---------------|----------------|
| Project     | San Juan County, NM / CO (NAD 83) |               |                |
| Map System: | US State Plane 1983               | System Datum: | Mean Sea Level |
| Geo Datum:  | North American Datum 1983         |               |                |
| Map Zone:   | Colorado Southern Zone            |               |                |

|                       |                        |                   |                    |
|-----------------------|------------------------|-------------------|--------------------|
| Site                  | Allison Unit Com #138H |                   |                    |
| Site Position:        |                        | Northing:         | 1,127,387.720 usft |
| From:                 | Map                    | Easting:          | 2,421,227.380 usft |
| Position Uncertainty: | 0.00 ft                | Slot Radius:      | 13.200 in          |
|                       |                        | Latitude:         | 36° 59' 58.740 N   |
|                       |                        | Longitude:        | 107° 28' 54.901 W  |
|                       |                        | Grid Convergence: | -1.22 °            |

|                      |                        |         |                     |                    |               |                   |
|----------------------|------------------------|---------|---------------------|--------------------|---------------|-------------------|
| Well                 | Allison Unit Com #138H |         |                     |                    |               |                   |
| Well Position        | +N/-S                  | 0.00 ft | Northing:           | 1,127,387.720 usft | Latitude:     | 36° 59' 58.740 N  |
|                      | +E/-W                  | 0.00 ft | Easting:            | 2,421,227.380 usft | Longitude:    | 107° 28' 54.901 W |
| Position Uncertainty |                        | 0.00 ft | Wellhead Elevation: | 0.00 ft            | Ground Level: | 6,134.00 ft       |

|           |            |             |                 |               |                     |
|-----------|------------|-------------|-----------------|---------------|---------------------|
| Wellbore  | Horz       |             |                 |               |                     |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | IGRF2015   | 1/22/2018   | 9.11            | 63.60         | 50,155              |

|                   |                          |               |               |                  |
|-------------------|--------------------------|---------------|---------------|------------------|
| Design            | Design #1                |               |               |                  |
| Audit Notes:      |                          |               |               |                  |
| Version:          | Phase:                   | PLAN          | Tie On Depth: | 2,914.70         |
| Vertical Section: | Depth From (TVD)<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Direction<br>(°) |
|                   | 0.00                     | 0.00          | 0.00          | 314.44           |

|                     |                 |             |                     |            |            |                       |                      |                     |         |               |
|---------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|---------------|
| Plan Sections       |                 |             |                     |            |            |                       |                      |                     |         |               |
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target        |
| 2,914.70            | 63.17           | 301.89      | 2,513.33            | 553.49     | -889.68    | 0.00                  | 0.00                 | 0.00                | 0.00    |               |
| 3,182.92            | 90.00           | 301.89      | 2,575.00            | 690.06     | -1,109.19  | 10.00                 | 10.00                | 0.00                | 0.01    |               |
| 3,905.58            | 90.52           | 321.47      | 2,571.68            | 1,168.24   | -1,646.30  | 2.71                  | 0.07                 | 2.71                | 88.44   |               |
| 6,507.90            | 90.52           | 321.47      | 2,548.00            | 3,203.83   | -3,267.38  | 0.00                  | 0.00                 | 0.00                | 0.00    | TD(138H Horz) |



# Planning Report - Geographic



|           |                                   |                              |                             |
|-----------|-----------------------------------|------------------------------|-----------------------------|
| Database: | EDM 5000.1 Single User Db         | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Company:  | Hilcorp Energy Company            | TVD Reference:               | rig @ 6149.00ft             |
| Project:  | San Juan County, NM / CO (NAD 83) | MD Reference:                | rig @ 6149.00ft             |
| Site:     | Allison Unit Com #138H            | North Reference:             | Grid                        |
| Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Wellbore: | Horz                              |                              |                             |
| Design:   | Design #1                         |                              |                             |

## Planned Survey

| Measured Depth (ft)   | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude        | Longitude         |
|-----------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-----------------|-------------------|
| 2,914.70              | 63.17           | 301.89      | 2,513.33            | 553.49     | -889.68    | 1,127,941.204       | 2,420,337.706      | 37° 0' 4.025 N  | 107° 29' 6.010 W  |
| 2,950.00              | 66.70           | 301.89      | 2,528.29            | 570.37     | -916.82    | 1,127,958.092       | 2,420,310.560      | 37° 0' 4.186 N  | 107° 29' 6.349 W  |
| 3,000.00              | 71.70           | 301.89      | 2,546.04            | 595.06     | -956.50    | 1,127,982.776       | 2,420,270.886      | 37° 0' 4.422 N  | 107° 29' 6.845 W  |
| 3,050.00              | 76.70           | 301.89      | 2,559.64            | 620.46     | -997.33    | 1,128,008.183       | 2,420,230.048      | 37° 0' 4.664 N  | 107° 29' 7.355 W  |
| 3,055.96              | 77.30           | 301.89      | 2,560.99            | 623.53     | -1,002.27  | 1,128,011.253       | 2,420,225.114      | 37° 0' 4.693 N  | 107° 29' 7.416 W  |
| <b>EP(138H Pilot)</b> |                 |             |                     |            |            |                     |                    |                 |                   |
| 3,100.00              | 81.70           | 301.89      | 2,569.01            | 646.40     | -1,039.02  | 1,128,034.121       | 2,420,188.359      | 37° 0' 4.912 N  | 107° 29' 7.875 W  |
| 3,150.00              | 86.71           | 301.89      | 2,574.05            | 672.67     | -1,081.25  | 1,128,060.391       | 2,420,146.136      | 37° 0' 5.163 N  | 107° 29' 8.403 W  |
| 3,182.92              | 90.00           | 301.89      | 2,575.00            | 690.06     | -1,109.19  | 1,128,077.775       | 2,420,118.197      | 37° 0' 5.329 N  | 107° 29' 8.751 W  |
| 3,200.00              | 90.01           | 302.35      | 2,575.00            | 699.14     | -1,123.65  | 1,128,086.855       | 2,420,103.735      | 37° 0' 5.415 N  | 107° 29' 8.932 W  |
| 3,300.00              | 90.09           | 305.06      | 2,574.91            | 754.63     | -1,206.83  | 1,128,142.344       | 2,420,020.554      | 37° 0' 5.946 N  | 107° 29' 9.972 W  |
| 3,400.00              | 90.16           | 307.77      | 2,574.70            | 813.98     | -1,287.29  | 1,128,201.703       | 2,419,940.089      | 37° 0' 6.516 N  | 107° 29' 10.979 W |
| 3,500.00              | 90.23           | 310.48      | 2,574.36            | 877.08     | -1,364.86  | 1,128,264.798       | 2,419,862.520      | 37° 0' 7.123 N  | 107° 29' 11.952 W |
| 3,600.00              | 90.30           | 313.19      | 2,573.89            | 943.77     | -1,439.36  | 1,128,331.488       | 2,419,788.020      | 37° 0' 7.767 N  | 107° 29' 12.887 W |
| 3,700.00              | 90.38           | 315.90      | 2,573.29            | 1,013.91   | -1,510.63  | 1,128,401.625       | 2,419,716.756      | 37° 0' 8.445 N  | 107° 29' 13.784 W |
| 3,800.00              | 90.45           | 318.61      | 2,572.57            | 1,087.33   | -1,578.50  | 1,128,475.051       | 2,419,648.887      | 37° 0' 9.157 N  | 107° 29' 14.640 W |
| 3,905.58              | 90.52           | 321.47      | 2,571.68            | 1,168.24   | -1,646.30  | 1,128,555.961       | 2,419,581.086      | 37° 0' 9.942 N  | 107° 29' 15.496 W |
| 4,000.00              | 90.52           | 321.47      | 2,570.82            | 1,242.10   | -1,705.12  | 1,128,629.820       | 2,419,522.266      | 37° 0' 10.660 N | 107° 29' 16.241 W |
| 4,100.00              | 90.52           | 321.47      | 2,569.91            | 1,320.32   | -1,767.41  | 1,128,708.042       | 2,419,459.973      | 37° 0' 11.420 N | 107° 29' 17.029 W |
| 4,200.00              | 90.52           | 321.47      | 2,569.00            | 1,398.55   | -1,829.70  | 1,128,786.263       | 2,419,397.679      | 37° 0' 12.180 N | 107° 29' 17.817 W |
| 4,300.00              | 90.52           | 321.47      | 2,568.09            | 1,476.77   | -1,892.00  | 1,128,864.485       | 2,419,335.386      | 37° 0' 12.940 N | 107° 29' 18.605 W |
| 4,400.00              | 90.52           | 321.47      | 2,567.18            | 1,554.99   | -1,954.29  | 1,128,942.707       | 2,419,273.092      | 37° 0' 13.700 N | 107° 29' 19.394 W |
| 4,500.00              | 90.52           | 321.47      | 2,566.27            | 1,633.21   | -2,016.59  | 1,129,020.929       | 2,419,210.799      | 37° 0' 14.460 N | 107° 29' 20.182 W |
| 4,600.00              | 90.52           | 321.47      | 2,565.36            | 1,711.43   | -2,078.88  | 1,129,099.151       | 2,419,148.505      | 37° 0' 15.221 N | 107° 29' 20.970 W |
| 4,700.00              | 90.52           | 321.47      | 2,564.45            | 1,789.66   | -2,141.17  | 1,129,177.372       | 2,419,086.212      | 37° 0' 15.981 N | 107° 29' 21.759 W |
| 4,800.00              | 90.52           | 321.47      | 2,563.54            | 1,867.88   | -2,203.47  | 1,129,255.594       | 2,419,023.918      | 37° 0' 16.741 N | 107° 29' 22.547 W |
| 4,900.00              | 90.52           | 321.47      | 2,562.63            | 1,946.10   | -2,265.76  | 1,129,333.816       | 2,418,961.625      | 37° 0' 17.501 N | 107° 29' 23.335 W |
| 5,000.00              | 90.52           | 321.47      | 2,561.72            | 2,024.32   | -2,328.05  | 1,129,412.038       | 2,418,899.331      | 37° 0' 18.261 N | 107° 29' 24.123 W |
| 5,100.00              | 90.52           | 321.47      | 2,560.81            | 2,102.54   | -2,390.35  | 1,129,490.260       | 2,418,837.038      | 37° 0' 19.021 N | 107° 29' 24.912 W |
| 5,200.00              | 90.52           | 321.47      | 2,559.90            | 2,180.77   | -2,452.64  | 1,129,568.481       | 2,418,774.744      | 37° 0' 19.781 N | 107° 29' 25.700 W |
| 5,300.00              | 90.52           | 321.47      | 2,558.99            | 2,258.99   | -2,514.93  | 1,129,646.703       | 2,418,712.451      | 37° 0' 20.541 N | 107° 29' 26.488 W |
| 5,400.00              | 90.52           | 321.47      | 2,558.08            | 2,337.21   | -2,577.23  | 1,129,724.925       | 2,418,650.157      | 37° 0' 21.301 N | 107° 29' 27.277 W |
| 5,500.00              | 90.52           | 321.47      | 2,557.17            | 2,415.43   | -2,639.52  | 1,129,803.147       | 2,418,587.864      | 37° 0' 22.061 N | 107° 29' 28.065 W |
| 5,600.00              | 90.52           | 321.47      | 2,556.26            | 2,493.65   | -2,701.82  | 1,129,881.368       | 2,418,525.570      | 37° 0' 22.821 N | 107° 29' 28.853 W |
| 5,700.00              | 90.52           | 321.47      | 2,555.35            | 2,571.88   | -2,764.11  | 1,129,959.590       | 2,418,463.276      | 37° 0' 23.581 N | 107° 29' 29.642 W |
| 5,800.00              | 90.52           | 321.47      | 2,554.44            | 2,650.10   | -2,826.40  | 1,130,037.812       | 2,418,400.983      | 37° 0' 24.341 N | 107° 29' 30.430 W |
| 5,900.00              | 90.52           | 321.47      | 2,553.53            | 2,728.32   | -2,888.70  | 1,130,116.034       | 2,418,338.689      | 37° 0' 25.102 N | 107° 29' 31.218 W |
| 6,000.00              | 90.52           | 321.47      | 2,552.62            | 2,806.54   | -2,950.99  | 1,130,194.256       | 2,418,276.396      | 37° 0' 25.862 N | 107° 29' 32.007 W |
| 6,100.00              | 90.52           | 321.47      | 2,551.71            | 2,884.76   | -3,013.28  | 1,130,272.477       | 2,418,214.102      | 37° 0' 26.622 N | 107° 29' 32.795 W |
| 6,200.00              | 90.52           | 321.47      | 2,550.80            | 2,962.98   | -3,075.58  | 1,130,350.699       | 2,418,151.809      | 37° 0' 27.382 N | 107° 29' 33.583 W |
| 6,300.00              | 90.52           | 321.47      | 2,549.89            | 3,041.21   | -3,137.87  | 1,130,428.921       | 2,418,089.515      | 37° 0' 28.142 N | 107° 29' 34.372 W |
| 6,400.00              | 90.52           | 321.47      | 2,548.98            | 3,119.43   | -3,200.16  | 1,130,507.143       | 2,418,027.222      | 37° 0' 28.902 N | 107° 29' 35.160 W |
| 6,507.90              | 90.52           | 321.47      | 2,548.00            | 3,203.83   | -3,267.38  | 1,130,591.540       | 2,417,960.010      | 37° 0' 29.722 N | 107° 29' 36.011 W |
| <b>TD(138H Horz)</b>  |                 |             |                     |            |            |                     |                    |                 |                   |



# Planning Report - Geographic



Database: EDM 5000.1 Single User Db  
Company: Hilcorp Energy Company  
Project: San Juan County, NM / CO (NAD 83)  
Site: Allison Unit Com #138H  
Well: Allison Unit Com #138H  
Wellbore: Horz  
Design: Design #1

Local Co-ordinate Reference: Well Allison Unit Com #138H  
TVD Reference: rig @ 6149.00ft  
MD Reference: rig @ 6149.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Design Targets

| Target Name<br>- hit/miss target<br>- Shape                                                                             | Dip Angle<br>(°) | Dip Dir.<br>(°) | TVD<br>(ft) | +N/-S<br>(ft) | +E/-W<br>(ft) | Northing<br>(usft) | Easting<br>(usft) | Latitude        | Longitude         |
|-------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|-------------|---------------|---------------|--------------------|-------------------|-----------------|-------------------|
| TD(138H Horz)<br>- plan hits target center<br>- Point                                                                   | 0.00             | 360.00          | 2,548.00    | 3,203.83      | -3,267.38     | 1,130,591.540      | 2,417,960.010     | 37° 0' 29.722 N | 107° 29' 36.011 W |
| EP(138H Pilot)<br>- plan misses target center by 14.27ft at 3055.96ft MD (2560.99 TVD, 623.53 N, -1002.27 E)<br>- Point | 0.00             | 360.00          | 2,575.00    | 622.12        | -1,000.00     | 1,128,009.840      | 2,420,227.380     | 37° 0' 4.680 N  | 107° 29' 7.388 W  |

## Casing Points

| Measured<br>Depth<br>(ft) | Vertical<br>Depth<br>(ft) | Name   | Casing<br>Diameter<br>(in) | Hole<br>Diameter<br>(in) |
|---------------------------|---------------------------|--------|----------------------------|--------------------------|
| 500.00                    | 500.00                    | 9 5/8" | 9.625                      | 12.250                   |



# **Hilcorp Energy Company**

San Juan County, NM / CO (NAD 83)

Allison Unit Com #138H

Allison Unit Com #138H

Horz

Design #1

## **Anticollision Report**

23 January, 2018





# Anticollision Report



|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Horz                              | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

| Reference                    | Design #1                                                           |
|------------------------------|---------------------------------------------------------------------|
| Filter type:                 | NO GLOBAL FILTER: Using user defined selection & filtering criteria |
| Interpolation Method:        | MD Interval 100.00ft                                                |
| Depth Range:                 | Unlimited                                                           |
| Results Limited by:          | Maximum center-center distance of 1,307.29 ft                       |
| Warning Levels Evaluated at: | 2.00 Sigma                                                          |
| Error Model:                 | ISCWSA                                                              |
| Scan Method:                 | Closest Approach 3D                                                 |
| Error Surface:               | Elliptical Conic                                                    |
| Casing Method:               | Not applied                                                         |

| Survey Tool Program |            | Date              | 1/23/2018 |                |  |
|---------------------|------------|-------------------|-----------|----------------|--|
| From<br>(ft)        | To<br>(ft) | Survey (Wellbore) | Tool Name | Description    |  |
| 0.00                | 2,914.70   | Design #1 (Pilot) | MWD       | MWD - Standard |  |
| 2,914.70            | 6,507.90   | Design #1 (Horz)  | MWD       | MWD - Standard |  |

| Summary                                                |                               |                            |                               |                                |                   |              |
|--------------------------------------------------------|-------------------------------|----------------------------|-------------------------------|--------------------------------|-------------------|--------------|
| Site Name                                              | Reference Measured Depth (ft) | Offset Measured Depth (ft) | Distance Between Centres (ft) | Distance Between Ellipses (ft) | Separation Factor | Warning      |
| Offset Well - Wellbore - Design                        |                               |                            |                               |                                |                   |              |
| Allison Unit Com #138H                                 |                               |                            |                               |                                |                   |              |
| Allison Unit Com #138H - Pilot - Design #1             | 3,300.00                      | 3,281.09                   | 103.93                        | 100.89                         | 34.206            | CC, ES, SF   |
| Allison Unit Com Offsets                               |                               |                            |                               |                                |                   |              |
| Allison UN #047B - Allison UN #047B - Allison UN #047B | 800.00                        | 800.00                     | 557.77                        | 552.95                         | 115.604           | CC, ES       |
| Allison UN #047B - Allison UN #047B - Allison UN #047B | 2,200.00                      | 2,080.27                   | 908.42                        | 893.47                         | 60.754            | SF           |
| Allison UN #063 - Allison UN #063 - Wellbore #1        |                               |                            |                               |                                |                   | Out of range |
| Allison UN Com #138 - Allison UN Com #138 - Allison UN |                               |                            |                               |                                |                   | Out of range |
| Dufour 32-6-22-2 - Dufour 32-6-22-2 - Dufour 32-6-22-2 |                               |                            |                               |                                |                   | Out of range |
| Dufour 32-6-23-2 - Dufour 32-6-23-2 - Dufour 32-6-23-2 |                               |                            |                               |                                |                   | Out of range |

| Offset Design         |                     | Allison Unit Com #138H - Allison Unit Com #138H - Pilot - Design #1 |                     |                 |             |                       |                                   |            |                      |                       |                         | Offset Site Error: |            | 0.00 ft |
|-----------------------|---------------------|---------------------------------------------------------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|--------------------|------------|---------|
| Survey Program: 0-MWD |                     |                                                                     |                     |                 |             |                       |                                   |            |                      |                       |                         | Offset Well Error: |            | 0.00 ft |
| Reference             |                     | Offset                                                              |                     | Semi Major Axis |             | Distance              |                                   |            |                      |                       |                         |                    |            | Warning |
| Measured Depth (ft)   | Vertical Depth (ft) | Measured Depth (ft)                                                 | Vertical Depth (ft) | Reference (ft)  | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor  |            |         |
| 2,914.70              | 2,513.23            | 2,914.70                                                            | 2,513.33            | 0.00            | 0.00        | -179.99               | 553.48                            | -889.68    | 0.11                 | 0.11                  | 0.00                    | N/A                |            |         |
| 3,000.00              | 2,546.04            | 2,999.85                                                            | 2,550.20            | 1.69            | 2.80        | -179.99               | 594.03                            | -954.85    | 4.60                 | 3.54                  | 1.05                    | 4.358              |            |         |
| 3,100.00              | 2,569.01            | 3,097.65                                                            | 2,591.53            | 3.34            | 6.06        | -179.99               | 640.85                            | -1,030.11  | 24.85                | 23.06                 | 1.80                    | 13.823             |            |         |
| 3,200.00              | 2,575.00            | 3,190.55                                                            | 2,630.79            | 5.37            | 9.17        | 179.86                | 685.33                            | -1,101.60  | 61.56                | 59.09                 | 2.47                    | 24.913             |            |         |
| 3,300.00              | 2,574.91            | 3,281.09                                                            | 2,669.06            | 7.67            | 12.22       | -179.50               | 728.67                            | -1,171.27  | 103.93               | 100.89                | 3.04                    | 34.206             | CC, ES, SF |         |
| 3,400.00              | 2,574.70            | 3,371.34                                                            | 2,707.20            | 10.19           | 15.26       | -177.94               | 771.88                            | -1,240.72  | 146.62               | 142.70                | 3.92                    | 37.378             |            |         |
| 3,500.00              | 2,574.36            | 3,461.10                                                            | 2,745.13            | 12.87           | 18.29       | -176.11               | 814.85                            | -1,309.79  | 189.92               | 184.43                | 5.49                    | 34.601             |            |         |
| 3,600.00              | 2,573.89            | 3,496.28                                                            | 2,760.00            | 15.66           | 19.48       | -176.43               | 831.69                            | -1,336.87  | 240.22               | 234.00                | 6.21                    | 38.657             |            |         |
| 3,700.00              | 2,573.29            | 3,496.28                                                            | 2,760.00            | 18.54           | 19.48       | -179.37               | 831.69                            | -1,336.87  | 313.46               | 307.75                | 5.70                    | 54.954             |            |         |
| 3,800.00              | 2,572.57            | 3,496.28                                                            | 2,760.00            | 21.47           | 19.48       | 176.21                | 831.69                            | -1,336.87  | 398.58               | 391.38                | 7.20                    | 55.374             |            |         |
| 3,900.00              | 2,571.73            | 3,496.28                                                            | 2,760.00            | 24.43           | 19.48       | 170.39                | 831.69                            | -1,336.87  | 489.29               | 480.89                | 8.40                    | 58.256             |            |         |
| 4,000.00              | 2,570.82            | 3,496.28                                                            | 2,760.00            | 27.42           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 582.95               | 573.45                | 9.50                    | 61.361             |            |         |
| 4,100.00              | 2,569.91            | 3,496.28                                                            | 2,760.00            | 30.47           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 678.43               | 667.93                | 10.49                   | 64.651             |            |         |
| 4,200.00              | 2,569.00            | 3,496.28                                                            | 2,760.00            | 33.57           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 775.04               | 763.64                | 11.41                   | 67.951             |            |         |
| 4,300.00              | 2,568.09            | 3,496.28                                                            | 2,760.00            | 36.72           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 872.42               | 860.17                | 12.25                   | 71.193             |            |         |
| 4,400.00              | 2,567.18            | 3,496.28                                                            | 2,760.00            | 39.92           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 970.34               | 957.29                | 13.05                   | 74.348             |            |         |
| 4,500.00              | 2,566.27            | 3,496.28                                                            | 2,760.00            | 43.14           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 1,068.64             | 1,054.83              | 13.81                   | 77.407             |            |         |
| 4,600.00              | 2,565.36            | 3,496.28                                                            | 2,760.00            | 46.40           | 19.48       | 170.02                | 831.69                            | -1,336.87  | 1,167.22             | 1,152.70              | 14.52                   | 80.368             |            |         |

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Anticollision Report



|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Horz                              | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

|                                                                                   |          |          |          |                 |        |          |                        |           |          |          |            |                    |         |
|-----------------------------------------------------------------------------------|----------|----------|----------|-----------------|--------|----------|------------------------|-----------|----------|----------|------------|--------------------|---------|
| Offset Design Allison Unit Com #138H - Allison Unit Com #138H - Pilot - Design #1 |          |          |          |                 |        |          |                        |           |          |          |            | Offset Site Error: | 0.00 ft |
| Survey Program: 0-MWD                                                             |          |          |          |                 |        |          |                        |           |          |          |            | Offset Well Error: | 0.00 ft |
| Reference                                                                         |          | Offset   |          | Semi Major Axis |        |          | Distance               |           |          |          |            |                    | Warning |
| Measured                                                                          | Vertical | Measured | Vertical | Reference       | Offset | Highside | Offset Wellbore Centre |           | Between  | Between  | Minimum    | Separation         |         |
| Depth                                                                             | Depth    | Depth    | Depth    |                 |        | Toolface | +N/-S                  | +E/-W     | Centres  | Ellipses | Separation | Factor             |         |
| (ft)                                                                              | (ft)     | (ft)     | (ft)     | (ft)            | (ft)   | (°)      | (ft)                   | (ft)      | (ft)     | (ft)     | (ft)       |                    |         |
| 4,700.00                                                                          | 2,564.45 | 3,496.28 | 2,760.00 | 49.68           | 19.48  | 170.02   | 831.69                 | -1,336.87 | 1,266.03 | 1,250.82 | 15.21      | 83.234             |         |



# Anticollision Report



|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Horz                              | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

| Offset Design Allison Unit Com Offsets - Allison UN #047B - Allison UN #047B - Allison UN #047B |                     |                     |                     |                 |             |                       |                                   |            |                      |                       |                         |                   | Offset Site Error: | 0.00 ft |
|-------------------------------------------------------------------------------------------------|---------------------|---------------------|---------------------|-----------------|-------------|-----------------------|-----------------------------------|------------|----------------------|-----------------------|-------------------------|-------------------|--------------------|---------|
| Survey Program: 2760-MWD                                                                        |                     |                     |                     |                 |             |                       |                                   |            |                      |                       |                         |                   | Offset Well Error: | 0.00 ft |
| Reference                                                                                       |                     | Offset              |                     | Semi Major Axis |             |                       | Distance                          |            |                      |                       |                         |                   |                    | Warning |
| Measured Depth (ft)                                                                             | Vertical Depth (ft) | Measured Depth (ft) | Vertical Depth (ft) | Reference (ft)  | Offset (ft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (ft) | +E/-W (ft) | Between Centres (ft) | Between Ellipses (ft) | Minimum Separation (ft) | Separation Factor |                    |         |
| 0.00                                                                                            | 0.00                | 0.00                | 0.00                | 0.00            | 0.00        | -179.24               | -557.72                           | -7.38      | 557.77               |                       |                         |                   |                    |         |
| 100.00                                                                                          | 100.00              | 100.00              | 100.00              | 0.18            | 0.21        | -179.24               | -557.72                           | -7.38      | 557.77               | 557.38                | 0.39                    | 1,429.348         |                    |         |
| 200.00                                                                                          | 200.00              | 200.00              | 200.00              | 0.60            | 0.42        | -179.24               | -557.72                           | -7.38      | 557.77               | 556.75                | 1.02                    | 544.835           |                    |         |
| 300.00                                                                                          | 300.00              | 300.00              | 300.00              | 1.03            | 0.63        | -179.24               | -557.72                           | -7.38      | 557.77               | 556.11                | 1.66                    | 336.562           |                    |         |
| 400.00                                                                                          | 400.00              | 400.00              | 400.00              | 1.45            | 0.84        | -179.24               | -557.72                           | -7.38      | 557.77               | 555.48                | 2.29                    | 243.486           |                    |         |
| 500.00                                                                                          | 500.00              | 500.00              | 500.00              | 1.87            | 1.05        | -179.24               | -557.72                           | -7.38      | 557.77               | 554.85                | 2.92                    | 190.737           |                    |         |
| 600.00                                                                                          | 600.00              | 600.00              | 600.00              | 2.30            | 1.26        | -179.24               | -557.72                           | -7.38      | 557.77               | 554.21                | 3.56                    | 156.774           |                    |         |
| 700.00                                                                                          | 700.00              | 700.00              | 700.00              | 2.72            | 1.47        | -179.24               | -557.72                           | -7.38      | 557.77               | 553.58                | 4.19                    | 133.078           |                    |         |
| 800.00                                                                                          | 800.00              | 800.00              | 800.00              | 3.14            | 1.68        | -179.24               | -557.72                           | -7.38      | 557.77               | 552.95                | 4.82                    | 115.604 CC, ES    |                    |         |
| 900.00                                                                                          | 899.97              | 899.97              | 899.97              | 3.44            | 1.89        | -121.29               | -557.72                           | -7.38      | 558.89               | 553.56                | 5.33                    | 104.872           |                    |         |
| 1,000.00                                                                                        | 999.68              | 999.68              | 999.68              | 3.62            | 2.10        | -121.83               | -557.72                           | -7.38      | 562.76               | 557.04                | 5.72                    | 98.427            |                    |         |
| 1,100.00                                                                                        | 1,098.88            | 1,098.88            | 1,098.88            | 3.85            | 2.31        | -122.73               | -557.72                           | -7.38      | 569.52               | 563.35                | 6.16                    | 92.403            |                    |         |
| 1,200.00                                                                                        | 1,197.28            | 1,197.28            | 1,197.28            | 4.17            | 2.52        | -123.94               | -557.72                           | -7.38      | 579.38               | 572.71                | 6.68                    | 86.796            |                    |         |
| 1,300.00                                                                                        | 1,294.61            | 1,294.61            | 1,294.61            | 4.60            | 2.72        | -125.42               | -557.72                           | -7.38      | 592.64               | 585.38                | 7.26                    | 81.620            |                    |         |
| 1,400.00                                                                                        | 1,390.62            | 1,390.62            | 1,390.62            | 5.15            | 2.93        | -127.09               | -557.72                           | -7.38      | 609.61               | 601.69                | 7.92                    | 76.926            |                    |         |
| 1,500.00                                                                                        | 1,485.03            | 1,485.03            | 1,485.03            | 5.84            | 3.12        | -128.90               | -557.72                           | -7.38      | 630.61               | 621.95                | 8.66                    | 72.783            |                    |         |
| 1,600.00                                                                                        | 1,577.59            | 1,577.59            | 1,577.59            | 6.70            | 3.32        | -130.77               | -557.72                           | -7.38      | 655.95               | 646.47                | 9.47                    | 69.253            |                    |         |
| 1,700.00                                                                                        | 1,668.04            | 1,668.04            | 1,668.04            | 7.73            | 3.51        | -132.65               | -557.72                           | -7.38      | 685.87               | 675.53                | 10.33                   | 66.366            |                    |         |
| 1,800.00                                                                                        | 1,756.14            | 1,756.14            | 1,756.14            | 8.93            | 3.70        | -134.47               | -557.72                           | -7.38      | 720.57               | 709.33                | 11.24                   | 64.122            |                    |         |
| 1,900.00                                                                                        | 1,841.64            | 1,841.64            | 1,841.64            | 10.32           | 3.87        | -136.18               | -557.72                           | -7.38      | 760.17               | 748.01                | 12.16                   | 62.490            |                    |         |
| 2,000.00                                                                                        | 1,924.31            | 1,924.31            | 1,924.31            | 11.89           | 4.05        | -137.76               | -557.72                           | -7.38      | 804.71               | 791.61                | 13.10                   | 61.422            |                    |         |
| 2,100.00                                                                                        | 2,003.93            | 2,003.93            | 2,003.93            | 13.65           | 4.22        | -139.17               | -557.72                           | -7.38      | 854.16               | 840.12                | 14.03                   | 60.862            |                    |         |
| 2,200.00                                                                                        | 2,080.27            | 2,080.27            | 2,080.27            | 15.60           | 4.38        | -140.38               | -557.72                           | -7.38      | 908.42               | 893.47                | 14.95                   | 60.754 SF         |                    |         |
| 2,300.00                                                                                        | 2,153.13            | 2,153.13            | 2,153.13            | 17.73           | 4.53        | -141.38               | -557.72 *                         | -7.38      | 967.35               | 951.50                | 15.85                   | 61.043            |                    |         |
| 2,400.00                                                                                        | 2,222.30            | 2,222.30            | 2,222.30            | 20.05           | 4.68        | -142.15               | -557.72                           | -7.38      | 1,030.76             | 1,014.05              | 16.71                   | 61.681            |                    |         |
| 2,500.00                                                                                        | 2,287.60            | 2,287.60            | 2,287.60            | 22.54           | 4.81        | -142.68               | -557.72                           | -7.38      | 1,098.43             | 1,080.89              | 17.54                   | 62.626            |                    |         |
| 2,600.00                                                                                        | 2,348.84            | 2,348.84            | 2,348.84            | 25.21           | 4.94        | -142.93               | -557.72                           | -7.38      | 1,170.11             | 1,151.78              | 18.33                   | 63.842            |                    |         |
| 2,700.00                                                                                        | 2,405.87            | 2,405.87            | 2,405.87            | 28.04           | 5.06        | -142.89               | -557.72                           | -7.38      | 1,245.54             | 1,226.47              | 19.07                   | 65.301            |                    |         |



## Anticollision Report

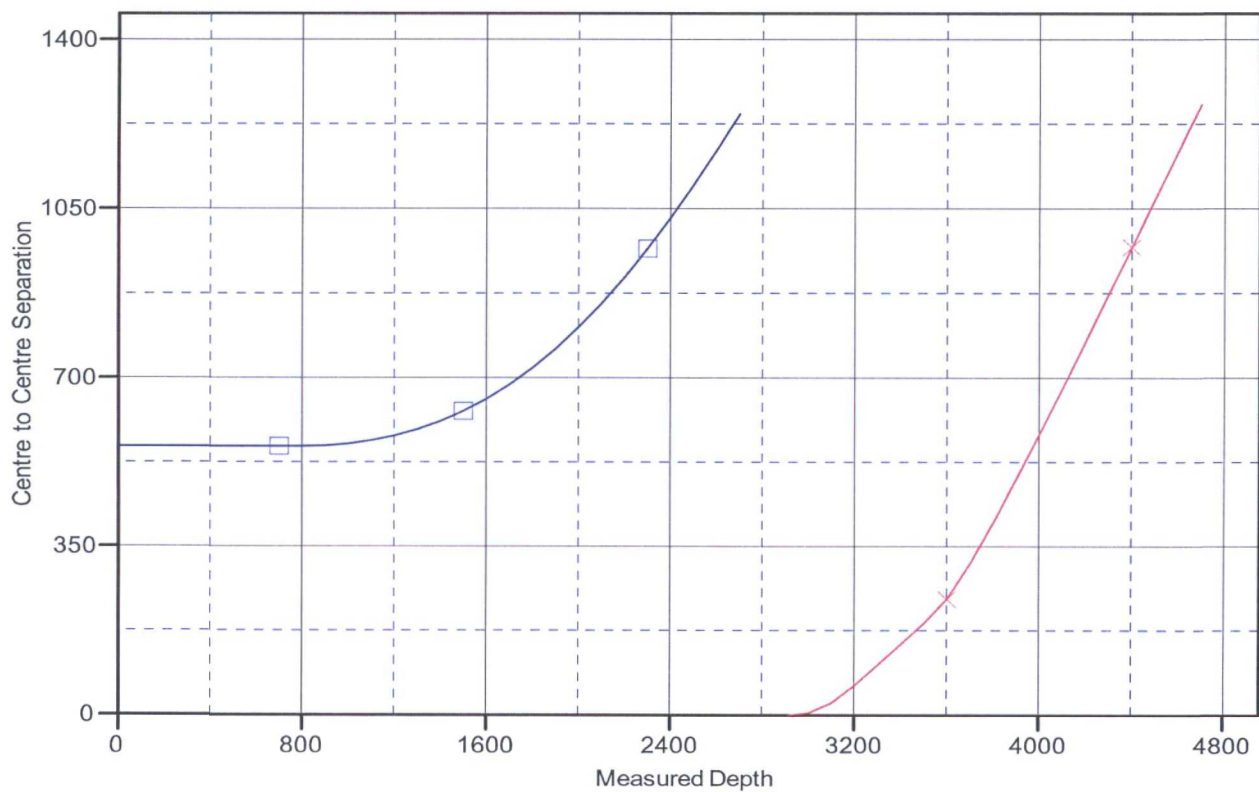


|                    |                                   |                              |                             |
|--------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:           | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:           | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:    | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:        | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:    | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:        | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore | Horz                              | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:  | Design #1                         | Offset TVD Reference:        | Offset Datum                |

Reference Depths are relative to rig @ 6149.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H  
Coordinate System is US State Plane 1983, Colorado Southern Zone  
Grid Convergence at Surface is: -1.22°

### Ladder Plot



### LEGEND

Jrnt Com #138H, Pilot, Design #1 V0

— Allison UN #047B, Allison UN #047B, Allison UN #047B V0



## Anticollision Report



|                     |                                   |                              |                             |
|---------------------|-----------------------------------|------------------------------|-----------------------------|
| Company:            | Hilcorp Energy Company            | Local Co-ordinate Reference: | Well Allison Unit Com #138H |
| Project:            | San Juan County, NM / CO (NAD 83) | TVD Reference:               | rig @ 6149.00ft             |
| Reference Site:     | Allison Unit Com #138H            | MD Reference:                | rig @ 6149.00ft             |
| Site Error:         | 0.00 ft                           | North Reference:             | Grid                        |
| Reference Well:     | Allison Unit Com #138H            | Survey Calculation Method:   | Minimum Curvature           |
| Well Error:         | 0.00 ft                           | Output errors are at         | 2.00 sigma                  |
| Reference Wellbore: | Horz                              | Database:                    | EDM 5000.1 Single User Db   |
| Reference Design:   | Design #1                         | Offset TVD Reference:        | Offset Datum                |

Reference Depths are relative to rig @ 6149.00ft

Offset Depths are relative to Offset Datum

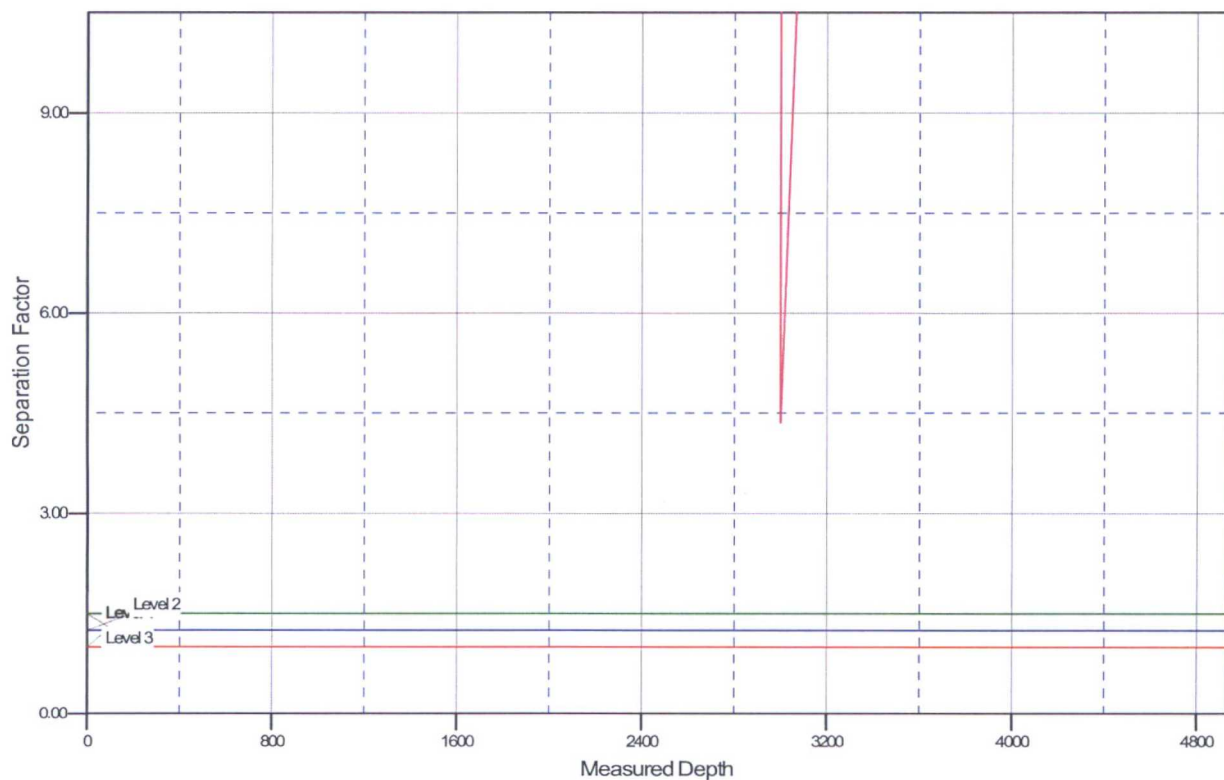
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Allison Unit Com #138H

Coordinate System is US State Plane 1983, Colorado Southern Zone

Grid Convergence at Surface is: -1.22°

### Separation Factor Plot



### LEGEND

Jrit Com #138H, Pilot, Design #1 V0

— Allison UN #047B, Allison UN #047B, Allison UN #047B V0

FORM

2

Rev  
08/16

## State of Colorado

## Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number:

401533880

## APPLICATION FOR PERMIT TO:

☒ Drill
 ☐ Deepen
 ☐ Re-enter
 ☐ Recomplete and Operate
TYPE OF WELL OIL ☐ GAS ☒ COALBED ☐ OTHER \_\_\_\_\_Refilling ☒ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐Sidetrack ☐

Date Received:

02/02/2018

Well Name: ALLISON UNIT COM

Well Number: 138H

Name of Operator: HILCORP ENERGY COMPANY

COGCC Operator Number: 10133

Address: P O BOX 61229

City: HOUSTON

State: TX

Zip: 77208

Contact Name: AMANDA RAY

Phone: (505)3245122

Fax: ( )

Email: mray@hilcorp.com

## RECLAMATION FINANCIAL ASSURANCE

Plugging and Abandonment Bond Surety ID: 20050122

## WELL LOCATION INFORMATION

QtrQtr: LOT 3 Sec: 8 Twp: 32N Rng: 6W Meridian: N

Latitude: 36.999650

Longitude: -107.481917

Footage at Surface: 176 Feet

FNL/FSL

FNL

2615

Feet

FEL/FWL

FWL

Field Name: IGNACIO BLANCO

Field Number: 38300

Ground Elevation: 6134

County: LA PLATA

GPS Data:

Date of Measurement: 04/07/2014

PDOP Reading: 1.0

Instrument Operator's Name: MARSHALL LINDEEN

If well is ☒ Directional ☐ Horizontal (highly deviated) **submit deviated drilling plan.**

Footage at Top of Prod Zone:

FNL/FSL

FEL/FWL

Bottom Hole:

FNL/FSL

FEL/FWL

427

FSL

1991

FEL

427

FSL

1991

FEL

Sec: 22

Twp: 32N

Rng: 6W

Sec: 22

Twp: 32N

Rng: 6W

## LOCATION SURFACE &amp; MINERALS &amp; RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ IndianThe Surface Owner is: ☐ is the mineral owner beneath the location.

(check all that apply)

☐ is committed to an Oil and Gas Lease.☐ has signed the Oil and Gas Lease.☐ is the applicant.The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed by this Well: No

The right to construct the Oil and Gas Location is granted by: Surface Use Agreement

Surface damage assurance if no agreement is in place:

Surface Surety ID:

## LEASE INFORMATION

Using standard QtrQtr, Sec, Twp, Rng format, describe one entire mineral lease that will be produced by this well (Describe lease beneath surface location if produced. Attach separate description page or map if necessary.)

SW NE, LOTS 2 & 3, SW/NW, SENW, LOT 4, N/2 NW, NW/NE, SEC. 22, T32N, R6W,  
COM AGREEMENT 73972 COVERS ALL THE ACRES IN THE LEASE. NOTE: FARMINGTON BLM HANDLES THIS COM  
AGREEMENT FOR THIS SECTION IN COLORADO BECAUSE THE BULK OF THE ALLISON UNIT IS IN NEW MEXICO.

ALSO NO FORM 2A WILL BE SUBMITTED ON THIS WELL SINCE THE SURFACE LOCATION IN NEW MEXICO AND IS  
COVERED WITH A SURFACE OWNER AGREEMENT(PREVIOUSLY SUBMITTED)

Total Acres in Described Lease: 335 Described Mineral Lease is: ☒ Fee ☐ State ☐ Federal ☐ Indian

Federal or State Lease # COC 73972

Distance from Completed Portion of Wellbore to Nearest Lease Line of described lease: 427 Feet

## CULTURAL DISTANCE INFORMATION

Distance to nearest:

Building: 1500 Feet  
Building Unit: 1500 Feet  
High Occupancy Building Unit: 5280 Feet  
Designated Outside Activity Area: 5280 Feet  
Public Road: 1000 Feet  
Above Ground Utility: 1200 Feet  
Railroad: 5280 Feet  
Property Line: 176 Feet

### INSTRUCTIONS:

- All measurements shall be provided from center of the Proposed Well to nearest of each cultural feature as described in Rule 303.a.(5).
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

## DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a: ☐ Buffer Zone  
☐ Exception Zone  
☐ Urban Mitigation Area

- Buffer Zone - as described in Rule 604.a.(2), within 1,000' of a Building Unit
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government: \_\_\_\_\_

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: \_\_\_\_\_

## SPACING and UNIT INFORMATION

Distance from completed portion of proposed wellbore to nearest completed portion of offset wellbore permitted or completed in the same formation: 1390 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 427 Feet (Enter 5280 for distance greater than 1 mile.)

Federal or State Unit Name (if appl): ALLISON UNIT Unit Number: \_\_\_\_\_

## SPACING & FORMATIONS COMMENTS

## OBJECTIVE FORMATIONS

| Objective Formation(s) | Formation Code | Spacing Order Number(s) | Unit Acreage Assigned to Well | Unit Configuration (N/2, SE/4, etc.) |
|------------------------|----------------|-------------------------|-------------------------------|--------------------------------------|
| FRUITLAND COAL         | FRLDC          | 112-61                  | 335                           | W/2, W/2E/2                          |

## DRILLING PROGRAM

Proposed Total Measured Depth: 3496 Feet

Distance from the proposed wellbore to nearest existing or proposed wellbore belonging to another operator, including plugged wells:

Enter distance if less than or equal to 1,500 feet: \_\_\_\_\_ Feet ☒ No well belonging to another operator within 1,500 feet

Will a closed-loop drilling system be used? Yes

Is H<sub>2</sub>S gas reasonably expected to be encountered during drilling operations at concentrations greater than or equal to 100 ppm? No (If Yes, attach an H<sub>2</sub>S Drilling Operations Plan)

Will salt sections be encountered during drilling? No

Will salt based (>15,000 ppm Cl) drilling fluids be used? No

Will oil based drilling fluids be used? No

BOP Equipment Type: ☐ Annular Preventor ☒ Double Ram ☐ Rotating Head ☐ None

## GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule N/A

## DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE

Drilling Fluids Disposal Methods: Commercial Disposal

Cuttings Disposal: OFFSITE

Cuttings Disposal Method: Commercial Disposal

Other Disposal Description:

A CLOSED LOOP SYSTEM WILL BE USED AND THE DRILLING FLUID WILL BE RECYCLED TO THE NEXT WELL UNLESS IT IS UNUSABLE AND THEN IT WILL BE HAULED TO AN AUTHORIZED DISPOSAL FACILITY IN NM, EITHER THE BASIN DISPOSAL OR THE AGUA MOSS FACILITY BOTH IN BLOOMFIELD NM

Beneficial reuse or land application plan submitted? \_\_\_\_\_

Reuse Facility ID: \_\_\_\_\_ or Document Number: \_\_\_\_\_

## CASING PROGRAM

| Casing Type | Size of Hole | Size of Casing | Wt/Ft | Csg/Liner Top | Setting Depth | Sacks Cmt | Cmt Btm | Cmt Top |
|-------------|--------------|----------------|-------|---------------|---------------|-----------|---------|---------|
| SURF        | 12+1/4       | 9+5/8          | 32.3  | 0             | 500           | 253       | 500     | 0       |
| 1ST         | 8+3/5        | 7              | 23    | 0             | 3496          | 717       | 3496    | 0       |

☒ Conductor Casing is NOT planned

## DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 604.a.(1)A. Exception Zone (within 500' of Building Unit)
- ☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)
- ☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)
- ☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)
- ☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

## GREATER WATTENBERG AREA LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318A.a. Exception Location (GWA Windows).
- ☐ Rule 318A.c. Exception Location (GWA Twinning).

## RULE 502.b VARIANCE REQUEST

☐ Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number \_\_\_\_\_

## OTHER LOCATION EXCEPTIONS

Check all that apply:

☒ Rule 318.c. Exception Location from Rule or Spacing Order Number 112-61

☐ Rule 603.a.(2) Exception Location (Property Line Setback).

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

## OPERATOR COMMENTS AND SUBMITTAL

Comments SURFACE OWNER AGREEMENT WAS PREVIOUSLY SUBMITTED

This application is in a Comprehensive Drilling Plan \_\_\_\_\_ CDP #: \_\_\_\_\_

Location ID: \_\_\_\_\_

Is this application being submitted with an Oil and Gas Location Assessment application? No

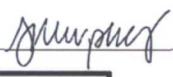
I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.

Signed: \_\_\_\_\_ Print Name: AMANDA RAY

Title: Operation/Regulatory Tech Date: 2/2/2018 Email: mray@hilcorp.com

Operator must have a valid water right or permit allowing for industrial use or purchased water from a seller that has a valid water right or permit allowing for industrial use, otherwise an application for a change in type of use is required under Colorado law. Operator must also use the water in the location set forth in the water right decree or well permit, otherwise an application for a change in place of use is required under Colorado law. Section 37-92-103(5), C.R.S. (2011).

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  Director of COGCC Date: 3/23/2018

Expiration Date: 03/22/2020

API NUMBER

05 067 09924 00

### **Conditions Of Approval**

All representations, stipulations and conditions of approval stated in the Form 2A for this location shall constitute representations, stipulations and conditions of approval for this Form 2 Permit-to-Drill and are enforceable to the same extent as all other representations, stipulations and conditions of approval stated in this Permit-to-Drill.

#### **COA Type**

#### **Description**

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ol style="list-style-type: none"><li>1) Provide 48 hour notice via form 42</li><li>2) Run and submit Directional Survey for primary well bore and for each lateral section</li><li>3) The operator shall comply with Rule 321, and it shall be the operator's responsibility to ensure that the well bore complies with setback requirements in Commission orders and/or rules prior to producing the well.</li><li>4) Operators are required to obtain a bottom hole pressure utilizing a bottom hole gauge after a minimum 48 hour shut-in period following completion and prior to sales</li><li>5) Comply with all applicable provisions of Order 112-204</li><li>6) Borehole problems while drilling that require an additional sidetrack: Contact &amp; discuss w/ COGCC Regional Engineer.</li></ol> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Best Management Practices**

#### **No BMP/COA Type**

#### **Description**

|   |                                |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Drilling/Completion Operations | Open-hole resistivity log with gamma-ray will be run from the kickoff point into the surface casing. A Cement Bond Log (CBL) with gamma-ray will be run on production casing, or on intermediate casing if a production liner is run. The horizontal portion of the wellbore will be logged with a measured-while-drilling gamma-ray log. The Form 5, Completion Report, will list all logs run and have those logs attached. |
|---|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Total: 1 comment(s)

### **Applicable Policies and Notices to Operators**

Notice Concerning Operating Requirements for Wildlife Protection.  
[http://cogcc.state.co.us/documents/reg/Policies/Wildlife\\_Notice.pdf](http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf)

### **Attachment Check List**

#### **Att Doc Num**

#### **Name**

|           |                        |
|-----------|------------------------|
| 401533880 | FORM 2 SUBMITTED       |
| 401534166 | WELL LOCATION PLAT     |
| 401534169 | WELL LOCATION PLAT     |
| 401534171 | WELL LOCATION PLAT     |
| 401534173 | ANTICOLLISION REPORT   |
| 401534177 | DEVIATED DRILLING PLAN |
| 401534795 | DIRECTIONAL DATA       |

Total Attach: 7 Files

### General Comments

| <u>User Group</u> | <u>Comment</u>                                                                                                                                                                                                                                               | <u>Comment Date</u> |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Engineer          | Changed 2nd string to 1st string.<br>Emailed operator to verify 1st sting setting depth. Operator confirmed depth.                                                                                                                                           | 03/05/2018          |
| Permit            | Final Review Completed.                                                                                                                                                                                                                                      | 03/02/2018          |
| Permit            | Well was originallly planned as a single horizontal wellbore. The current plan added a directional pilot hole and retained the horizontal wellbore, now as a horizontal sidetrack wellbore.                                                                  | 03/02/2018          |
| Permit            | Exception location request in well file (doc: 2519617).                                                                                                                                                                                                      | 03/01/2018          |
| Permit            | Corrected to directional wellbore and corrected BHL footages to reflect well location plat per operator.<br>Corrected distance to property line (typo).<br>Corrected distance to nearest lease line and distance to nearest unit boundary (BHL footage FSL). | 03/01/2018          |
| Permit            | Passed completeness.                                                                                                                                                                                                                                         | 02/02/2018          |

Total: 6 comment(s)

FORM

2

Rev  
08/16

## State of Colorado

## Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number:

401504744

## APPLICATION FOR PERMIT TO:

☒ Drill☐ Deepen☐ Re-enter☐ Recomplete and OperateTYPE OF WELL OIL ☐ GAS ☒ COALBED ☐ OTHER \_\_\_\_\_Refiling ☐ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐Sidetrack ☒

Date Received:

01/05/2018

Well Name: ALLISON UNIT COM

Well Number: 138H

Name of Operator: HILCORP ENERGY COMPANY

COGCC Operator Number: 10133

Address: P O BOX 61229

City: HOUSTON

State: TX

Zip: 77208

Contact Name: AMANDA RAY

Phone: (505)324-5122

Fax: ( )

Email: mray@hilcorp.com

## RECLAMATION FINANCIAL ASSURANCE

Plugging and Abandonment Bond Surety ID: 20050122

## WELL LOCATION INFORMATION

QtrQtr: LOT 3 Sec: 8 Twp: 32N Rng: 6W Meridian: N

Latitude: 36.999650

Longitude: -107.481917

Footage at Surface: 176 Feet FNL/FSL FNL 2615 Feet FEL/FWL FWL

Field Name: IGNACIO BLANCO

Field Number: 38300

Ground Elevation: 6134

County: LA PLATA

GPS Data:

Date of Measurement: 04/07/2014 PDOP Reading: 1.0 Instrument Operator's Name: MARSHALL LINDEEN

If well is ☐ Directional ☒ Horizontal (highly deviated) submit deviated drilling plan.

|                              |          |         |         |              |         |         |
|------------------------------|----------|---------|---------|--------------|---------|---------|
| Footage at Top of Prod Zone: |          | FNL/FSL | FEL/FWL | Bottom Hole: | FNL/FSL | FEL/FWL |
| 453                          | FSL      | 1978    | FEL     | 675          | FNL     | 990     |
| Sec: 22                      | Twp: 32N | Rng: 6W | Sec: 22 | Twp: 32N     | Rng: 6W |         |

## LOCATION SURFACE &amp; MINERALS &amp; RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ IndianThe Surface Owner is: ☐ is the mineral owner beneath the location.(check all that apply) ☐ is committed to an Oil and Gas Lease.☐ has signed the Oil and Gas Lease.☐ is the applicant.The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed by this Well: No

The right to construct the Oil and Gas Location is granted by: Surface Use Agreement

Surface damage assurance if no agreement is in place: Surface Surety ID:

## LEASE INFORMATION

Using standard QtrQtr, Sec, Twp, Rng format, describe one entire mineral lease that will be produced by this well (Describe lease beneath surface location if produced. Attach separate description page or map if necessary.)

SW NE, LOTS 2 & 3, SW/NW, SENW, LOT 4, N/2 NW, NW/NE, SEC. 22, T32N, R6W,  
COM AGREEMENT 73972 COVERS ALL THE ACRES IN THE LEASE. NOTE: FARMINGTON BLM HANDLES THIS COM  
AGREEMENT FOR THIS SECTION IN COLORADO BECAUSE THE BULK OF THE ALLISON UNIT IS IN NEW MEXICO.

ALSO NO FORM 2A WILL BE SUBMITTED ON THIS WELL SINCE THE SURFACE LOCATION IN NEW MEXICO AND IS  
COVERED WITH A SURFACE OWNER AGREEMENT(PREVIOUSLY SUBMITTED)

Total Acres in Described Lease: 335 Described Mineral Lease is: ☒ Fee ☐ State ☐ Federal ☐ Indian

Federal or State Lease # COC 73972

Distance from Completed Portion of Wellbore to Nearest Lease Line of described lease: 453 Feet

## CULTURAL DISTANCE INFORMATION

Distance to nearest:

Building: 1500 Feet  
Building Unit: 1500 Feet  
High Occupancy Building Unit: 5280 Feet  
Designated Outside Activity Area: 5280 Feet  
Public Road: 1000 Feet  
Above Ground Utility: 1200 Feet  
Railroad: 5280 Feet  
Property Line: 176 Feet

### INSTRUCTIONS:

- All measurements shall be provided from center of the Proposed Well to nearest of each cultural feature as described in Rule 303.a.(5).
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

## DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a: ☐ Buffer Zone  
☐ Exception Zone  
☐ Urban Mitigation Area

- Buffer Zone - as described in Rule 604.a.(2), within 1,000' of a Building Unit
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government: \_\_\_\_\_

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: \_\_\_\_\_

## SPACING and UNIT INFORMATION

Distance from completed portion of proposed wellbore to nearest completed portion of offset wellbore permitted or completed in the same formation: 1390 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 453 Feet (Enter 5280 for distance greater than 1 mile.)

Federal or State Unit Name (if appl): ALLISON UNIT Unit Number: \_\_\_\_\_

## SPACING & FORMATIONS COMMENTS

## OBJECTIVE FORMATIONS

| Objective Formation(s) | Formation Code | Spacing Order Number(s) | Unit Acreage Assigned to Well | Unit Configuration (N/2, SE/4, etc.) |
|------------------------|----------------|-------------------------|-------------------------------|--------------------------------------|
| FRUITLAND COAL         | FRLDC          | 112-61                  | 335                           | W/2, W/2E/2                          |

**DRILLING PROGRAM**Proposed Total Measured Depth: 6508 Feet

Distance from the proposed wellbore to nearest existing or proposed wellbore belonging to another operator, including plugged wells:

Enter distance if less than or equal to 1,500 feet: \_\_\_\_\_ Feet ☒ No well belonging to another operator within 1,500 feetWill a closed-loop drilling system be used? YesIs H<sub>2</sub>S gas reasonably expected to be encountered during drilling operations at concentrations greater than or equal to 100 ppm? No (If Yes, attach an H<sub>2</sub>S Drilling Operations Plan)Will salt sections be encountered during drilling? NoWill salt based (>15,000 ppm Cl) drilling fluids be used? NoWill oil based drilling fluids be used? NoBOP Equipment Type: ☐ Annular Preventor ☒ Double Ram ☐ Rotating Head ☐ None**GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING**Water well sampling required per Rule N/A**DRILLING WASTE MANAGEMENT PROGRAM**Drilling Fluids Disposal: OFFSITEDrilling Fluids Disposal Methods: Commercial DisposalCuttings Disposal: OFFSITECuttings Disposal Method: Commercial Disposal

Other Disposal Description:

A CLOSED LOOP SYSTEM WILL BE USED AND THE DRILLING FLUID WILL BE RECYCLED TO THE NEXT WELL UNLESS IT IS UNUSABLE AND THEN IT WILL BE HAULED TO AN AUTHORIZED DISPOSAL FACILITY IN NM, EITHER THE BASIN DISPOSAL OR THE AGUA MOSS FACILITY BOTH IN BLOOMFIELD NM

Beneficial reuse or land application plan submitted? Yes

Reuse Facility ID: \_\_\_\_\_ or Document Number: \_\_\_\_\_

**CASING PROGRAM**

| Casing Type | Size of Hole | Size of Casing | Wt/Ft | Csg/Liner Top | Setting Depth | Sacks Cmt | Cmt Btm | Cmt Top |
|-------------|--------------|----------------|-------|---------------|---------------|-----------|---------|---------|
| SURF        | 12+1/4       | 9+5/8          | 32.3  | 0             | 500           | 253       | 500     | 0       |
| 1ST         | 8+3/4        | 7              | 23    | 0             | 3496          | 717       | 3496    | 0       |
| 1ST LINER   | 6+1/4        | 4+1/2          | 11.6  | 3149          | 6508          |           |         |         |

☒ Conductor Casing is NOT planned**DESIGNATED SETBACK LOCATION EXCEPTIONS**

Check all that apply:

- ☐ Rule 604.a.(1)A. Exception Zone (within 500' of Building Unit)
- ☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)
- ☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)
- ☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)
- ☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

**GREATER WATTENBERG AREA LOCATION EXCEPTIONS**

Check all that apply:

- ☐ Rule 318A.a. Exception Location (GWA Windows).
- ☐ Rule 318A.c. Exception Location (GWA Twinning).

**RULE 502.b VARIANCE REQUEST**

☐ Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number \_\_\_\_\_

**OTHER LOCATION EXCEPTIONS**

Check all that apply:

☒ Rule 318.c. Exception Location from Rule or Spacing Order Number 112-61

☐ Rule 603.a.(2) Exception Location (Property Line Setback).

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

**OPERATOR COMMENTS AND SUBMITTAL**

Comments \_\_\_\_\_

This application is in a Comprehensive Drilling Plan \_\_\_\_\_ CDP #: \_\_\_\_\_

Location ID: \_\_\_\_\_

Is this application being submitted with an Oil and Gas Location Assessment application? No

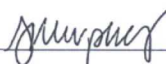
I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.

Signed: \_\_\_\_\_ Print Name: Amanda Ray

Title: Operation/Regulatory Tech Date: 1/5/2018 Email: mray@hilcorp.com

Operator must have a valid water right or permit allowing for industrial use or purchased water from a seller that has a valid water right or permit allowing for industrial use, otherwise an application for a change in type of use is required under Colorado law. Operator must also use the water in the location set forth in the water right decree or well permit, otherwise an application for a change in place of use is required under Colorado law. Section 37-92-103(5), C.R.S. (2011).

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  Director of COGCC Date: 3/23/2018

Expiration Date: 03/22/2020

**API NUMBER**

05 067 09924 01

### **Conditions Of Approval**

All representations, stipulations and conditions of approval stated in the Form 2A for this location shall constitute representations, stipulations and conditions of approval for this Form 2 Permit-to-Drill and are enforceable to the same extent as all other representations, stipulations and conditions of approval stated in this Permit-to-Drill.

#### **COA Type**

#### **Description**

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ol style="list-style-type: none"><li>1) Provide 48 hour notice via form 42</li><li>2) Run and submit as drilled Directional Survey for primary well bore and for each lateral section</li><li>3) The operator shall comply with Rule 321, and it shall be the operator's responsibility to ensure that the well bore complies with setback requirements in Commission orders and/or rules prior to producing the well.</li><li>4) Sample and test two closest water wells within 1/2 mile swath of lateral wellbore Fruitland Coal (horizontal dimension – top to bottom of pay).</li><li>5) Operators are required to obtain a bottom hole pressure utilizing a bottom hole gauge after a minimum 48 hour shut-in period following completion and prior to sales</li><li>6) Comply with all applicable provisions of Order 112-204</li><li>7) Borehole problems while drilling that require an additional sidetrack: Contact &amp; discuss w/ COGCC Regional Engineer – Craig Burger within 24 hours of occurrence<br/>970-625-2497 ext 2 office<br/>970-319-4194 cell<br/>craig.burger@state.co.us</li></ol> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Best Management Practices**

#### **No BMP/COA Type**

#### **Description**

|   |                                |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Drilling/Completion Operations | Open-hole resistivity log with gamma-ray will be run from the kickoff point into the surface casing. A Cement Bond Log (CBL) with gamma-ray will be run on production casing, or on intermediate casing if a production liner is run. The horizontal portion of the wellbore will be logged with a measured-while-drilling gamma-ray log. The Form 5, Completion Report, will list all logs run and have those logs attached. |
|---|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Total: 1 comment(s)

### **Applicable Policies and Notices to Operators**

Notice Concerning Operating Requirements for Wildlife Protection.  
[http://cogcc.state.co.us/documents/reg/Policies/Wildlife\\_Notice.pdf](http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf)

### **Attachment Check List**

#### **Att Doc Num**

#### **Name**

|           |                        |
|-----------|------------------------|
| 901664    | DEVIATED DRILLING PLAN |
| 401504744 | FORM 2 SUBMITTED       |
| 401534166 | WELL LOCATION PLAT     |
| 401534169 | WELL LOCATION PLAT     |
| 401534171 | WELL LOCATION PLAT     |
| 401560432 | DIRECTIONAL DATA       |

Total Attach: 6 Files

### General Comments

| <u>User Group</u> | <u>Comment</u>                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>Comment Date</u> |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Engineer          | Corrected casing information. 2nd string to 1st string and 3/5 to 3/4. Liner setting depth to 6508'. Emailed operator for concurrence. Operator concurred.                                                                                                                                                                                                                                                                          | 03/05/2018          |
| Permit            | Final Review Completed.                                                                                                                                                                                                                                                                                                                                                                                                             | 03/02/2018          |
| Permit            | Well was originally planned as a single horizontal wellbore. The current plan added a directional pilot hole and retained the horizontal wellbore, now as a horizontal sidetrack wellbore.                                                                                                                                                                                                                                          | 03/02/2018          |
| Permit            | Exception location request in well file (doc: 2519617).                                                                                                                                                                                                                                                                                                                                                                             | 03/01/2018          |
| Permit            | Corrected proposed total measured depth, per revised directional plan (same BHL, slight change in wellbore geometry).                                                                                                                                                                                                                                                                                                               | 03/01/2018          |
| Engineer          | DRILLING AND WASTE PLANS TAB<br>There is no other well bore within 1500' of this lateral well bore that is operated by another company.                                                                                                                                                                                                                                                                                             | 01/31/2018          |
| Engineer          | The surface location of this proposed well is in NM with the directional and the production portions being in CO<br><br>CO API # 05-067-09924<br><br>There is a conventional gas well located within a quarter mile of the directional well bore; so, the search for sampling and analyzing fresh water wells extends from 1/4 mile to 1/2 mile from the conventional well (HILCORP - ALLISON UNIT COM #138H - API # 05-067-09924). | 01/31/2018          |
| Permit            | Passed Completeness.<br>Review Rule 317 p. BMP requirements during technical review (SHL in New Mexico, BHL in Colorado).<br>Per communication with the Operator, the following corrections were made:<br>- Bond ID                                                                                                                                                                                                                 | 01/12/2018          |

Total: 8 comment(s)