



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, July 17, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit approval for TEN HIGH 1N-20HU
47-051-02021-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over the printed name and title.

Operator's Well Number: TEN HIGH 1N-20HU
Farm Name: LAWRENCE & SHIRLEY CON.
U.S. WELL NUMBER: 47-051-02021-00-00
Horizontal 6A New Drill
Date Issued: 7/17/2018

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-926-0499 Ext 1274

Barry K. Lay, Chairman
dep.wv.gov

June 21, 2018

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02021

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Ten High 1N-20HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton 7.5'

The deep well review of the application for the above company is **Approved to drill to Trenton for Point Pleasant completion.**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: Heaven Hill 3-8HU 47-051-01967; Ten High 1N-11HU 47-051-01960; Ten High 1N-12HU 47-051-01961; Ten High 1N-13HU 47-051-01965
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,


Susan Rose
Administrator

WW-6B
(04/15)

API NO. 47-051 - 02021
OPERATOR WELL NO. Ten High 1N-20HU
Well Pad Name: Ten High

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Ten High 1N-20HU Well Pad Name: Ten High

3) Farm Name/Surface Owner: Lawrence & Shirley Conkle, ests Public Road Access: Shepherd Ridge Lane CR 21/9

4) Elevation, current ground: 1310' Elevation, proposed post-construction: 1310'

5) Well Type (a) Gas Oil Underground Storage

Other _____

(b) If Gas Shallow _____ Deep

Horizontal

JN 7/17/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,635' - 11,744' thickness of 139' and anticipated pressure of approximately 9500 psi

8) Proposed Total Vertical Depth: 11,924'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 22,002'

11) Proposed Horizontal Leg Length: 9,534'

12) Approximate Fresh Water Strata Depths: 70'; 1026'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 935' and Pittsburgh Coal - 1020'

16) Approximate Depth to Possible Void (coal mine, karst, other): none anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No _____

(a) If Yes, provide Mine Info: Name: Murray County Coal Co. / Marshall County Mine
Depth: 1020' TVD and 290' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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18)

CASING AND TUBING PROGRAM

| TYPE | Size (in) | New or Used | Grade | Weight per ft. (lb/ft) | FOOTAGE: For Drilling (ft) | INTERVALS: Left in Well (ft) | CEMENT: Fill-up (Cu. Ft.)/CTS |
|--------------|-----------|-------------|-------|------------------------|----------------------------|------------------------------|-------------------------------|
| Conductor | 30" | NEW | BW | BW | 120' | 120' | 259ft ³ (CTS) |
| Fresh Water | 20" | NEW | J55 | 106.5# | 1,086' | 1,086" | 1,725ft ³ (CTS) |
| Coal | 13 3/8" | NEW | J55 | 54.5# | 2,803' | 2,803' | 1,977ft ³ (CTS) |
| Intermediate | 9 5/8" | NEW | HP110 | 47# | 10,811' | 10,811' | 3,525ft ³ (CTS) |
| Production | 5 1/2" | NEW | P110 | 23# | 22,002' | 22,002' | 4,502ft ³ (CTS) |
| Tubing | 2 7/8" | NEW | P110 | 6.5# | | | |
| Liners | | | | | | | |

JN 7/17/18

| TYPE | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Anticipated Max. Internal Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|-----------|------------------------|---------------------|----------------------|------------------------------------------|-------------|--------------------------|
| Conductor | 30" | 36" | 1.0 | 2,333 | 1,866 | CLASS A | 1.2 |
| Fresh Water | 20" | 26" | .5 | 2,410 | 1,928 | SEE #24 | 1.2 |
| Coal | 13 3/8" | 17 1/2" | .38 | 2,740 | 2,192 | SEE #24 | 1.2 |
| Intermediate | 9 5/8" | 12 1/4" | .472 | 10,730 | 6,968 | SEE #24 | 1.99 |
| Production | 5 1/2" | 8 1/2" | .415 | 16,510 | 10,864 | SEE #24 | 1.18 |
| Tubing | 2 7/8" | | | 11.385 | 11,624 | | |
| Liners | | | | | | | |

PACKERS

| | | | | |
|-------------|--|--|--|--|
| Kind: | | | | |
| Sizes: | | | | |
| Depths Set: | | | | |

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WW-6B
(10/14)

API NO. 47-051 - 02021
OPERATOR WELL NO. Ten High 1N-20HU
Well Pad Name: Ten High

JN 7/17/18

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 23,835,000 lb proppant and 368,506 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.2

22) Area to be disturbed for well pad only, less access road (acres): 5.92

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

24) Describe all cement additives associated with each cement type:

*See Attachment

25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

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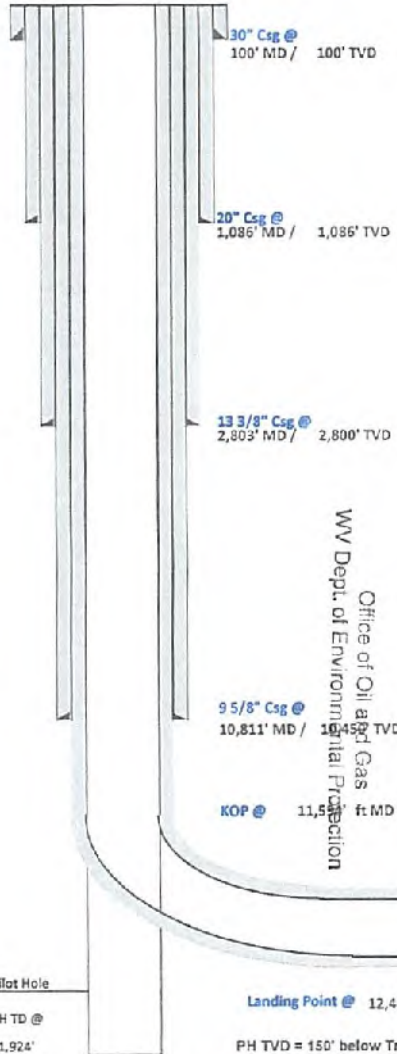
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Office of Oil and Gas
WV Dept. of Environmental Protection

*Note: Attach additional sheets as needed.



WELL NAME: Ten High 1N-20HU
STATE: West Virginia **COUNTY:** Marshall
DISTRICT: Meade
DF Elev: 1,310' **GL Elev:** 1,310'
TD: 22,002'
TH Latitude: 39.80672175
TH Longitude: -80.6808535
BH Latitude: 6 39.834712
BH Longitude: -80.691144



| Formation | Depth TVD |
|---------------------|-----------|
| Deepest Fresh Water | 1,026' |
| Sewickley Coal | 935' |
| Pittsburgh Coal | 1,020' |
| Big Lime | 2,090' |
| Berea | 2,653' |
| Tully | 6,591' |
| Marcellus | 6,702' |
| Onondaga | 6,753' |
| Salina | 7,492' |
| Lockport | 8,507' |
| Utica | 11,362' |
| Point Pleasant | 11,635' |
| Landing Depth | 11,690' |
| Trenton | 11,774' |
| Pilot Hole TD | 11,924' |

| CASING SUMMARY | | | | | | | |
|----------------|----------------|---------------|------------|-------------|----------------|-------|---------------|
| Type | Hole Size (in) | Csg Size (in) | Depth (MD) | Depth (TVD) | Weight (lb/ft) | Grade | Top of Cement |
| Conductor | 36 | 30 | 120' | 120' | BW | BW | Surface |
| Surface | 26 | 20 | 1,086' | 1,086' | 106.5 | J55 | Surface |
| Intermediate 1 | 17 1/2 | 13 3/8 | 2,803' | 2,800' | 54.5 | J55 | Surface |
| Intermediate 2 | 12 1/4 | 9 5/8 | 10,811' | 10,450' | 47 | HP110 | Surface |
| Production | 8 1/2 | 5 1/2 | 22,002' | 11,524' | 23 | P110 | Surface |

| CEMENT SUMMARY | | | | DRILLING DETAILS | |
|----------------|-------|-------|---------|------------------|-------------------------------------------------------------------------------|
| | Sacks | Class | Density | Fluid Type | Centralizer Notes |
| Conductor | 291 | A | 15.6 | Air | None |
| Surface | 1,874 | A | 15.6 | Air | 3 Centralizers at equal distance |
| Intermediate 1 | 2,146 | A | 15 | Air | 1 Centralizer every other jt |
| Intermediate 2 | 2,856 | A | 14.5 | Air | 1 Centralizer every other jt |
| Production | 4,502 | A | 15 | Air / SOBMM | 1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc |

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 Office of Oil and Gas
 Initial Production

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9/27/18

51-0202-1



Tug Hill Operating, LLC Casing and Cement Program

Ten High 1N-20HU

Casing

| | String | Grade | Bit Size | Depth (Measured) | Cement Fill Up |
|----------------|---------|-------|----------|------------------|----------------|
| Conductor | 30" | BW | 36" | 120' | CTS |
| Surface | 20" | J55 | 26" | 1,086' | CTS |
| Intermediate 1 | 13 3/8" | J55 | 17 1/2" | 2,803' | CTS |
| Intermediate 2 | 9 5/8" | HP110 | 12 1/4" | 10,811' | CTS |
| Production | 5 1/2" | P110 | 8 1/2" | 22,002' | CTS |

Cement

JN 7/17/18

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

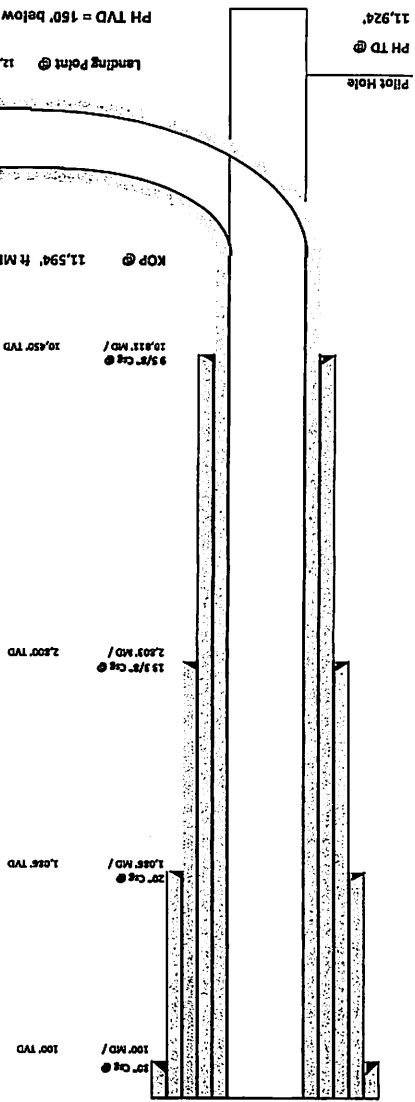
Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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51-02021



| FORMATION TOPS | |
|---------------------|-----------|
| Formation | Depth TVD |
| Deepest Fresh Water | 1,026' |
| Swinkley Coal | 935' |
| Pittsburgh Coal | 1,020' |
| Dlg Lime | 2,090' |
| Berea | 2,653' |
| Tully | 6,591' |
| Marcellus | 6,702' |
| Chondaga | 6,753' |
| Sabina | 7,492' |
| Lodport | 8,507' |
| Utica | 11,362' |
| Point Pleasant | 11,635' |
| Landing Depth | 11,690' |
| Trenton | 11,774' |
| Pilot Hole TD | 11,924' |

| | |
|------------|------------------|
| WELL NAME: | Ten High IN-20HU |
| STATE: | West Virginia |
| COUNTY: | Marshall |
| DISTRICT: | Meade |
| DP Elev: | 1,310' |
| TD: | 22,002' |
| TH Length: | 39,80672175' |
| TH Length: | 39,834712' |
| BH Length: | 39,834712' |
| BH Length: | 40,691144' |

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| CEMENT SUMMARY | | | |
|------------------|-------|---------|-------------------------------------------------------------------------------|
| Sacks | Class | Density | Field Type |
| 291 | A | 15.6 | None |
| Conductor | | | |
| 5 Surfaces | A | 15.6 | 5 Cementers at equal distance |
| 1 Intermediate 1 | A | 15 | 1 Cementer every other ft |
| 2 Intermediate 2 | A | 14.5 | 1 Cementer every other ft |
| Production | A | 15 | 1 every other joint in lateral; 1 per joint in curve; 1 every other ft to the |

| CASING SUMMARY | | | | | | | |
|----------------|----------------|---------------|------------|-------------|----------------|--------|---------------|
| Type | Hole Size (in) | Csg Size (in) | Depth (MD) | Depth (TVD) | Weight (lb/ft) | Grade | Top of Cement |
| Conductor | 36 | 30 | 100' | 100' | BW | BW | Surface |
| Surface | 26 | 20 | 1,026' | 1,026' | J55 | J55 | Surface |
| Intermediate 1 | 17 1/2 | 13 3/8 | 2,607' | 2,607' | J55 | J55 | Surface |
| Intermediate 2 | 12 1/8 | 9 5/8 | 10,811' | 10,450' | HP110 | HP110 | Surface |
| Production | 8 1/2 | 5 1/2 | 22,002' | 11,524' | HCP110 | HCP110 | Surface |

Lateral TD @ 22,002' R MD
11,524' R TVD

2/21/18

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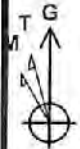
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51-02021



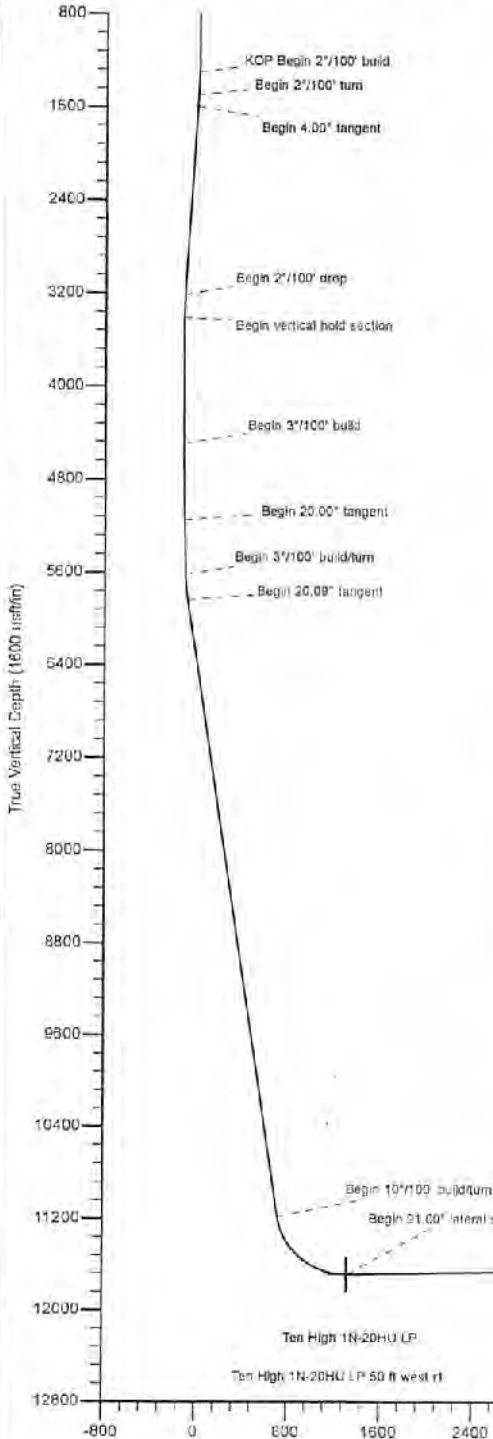
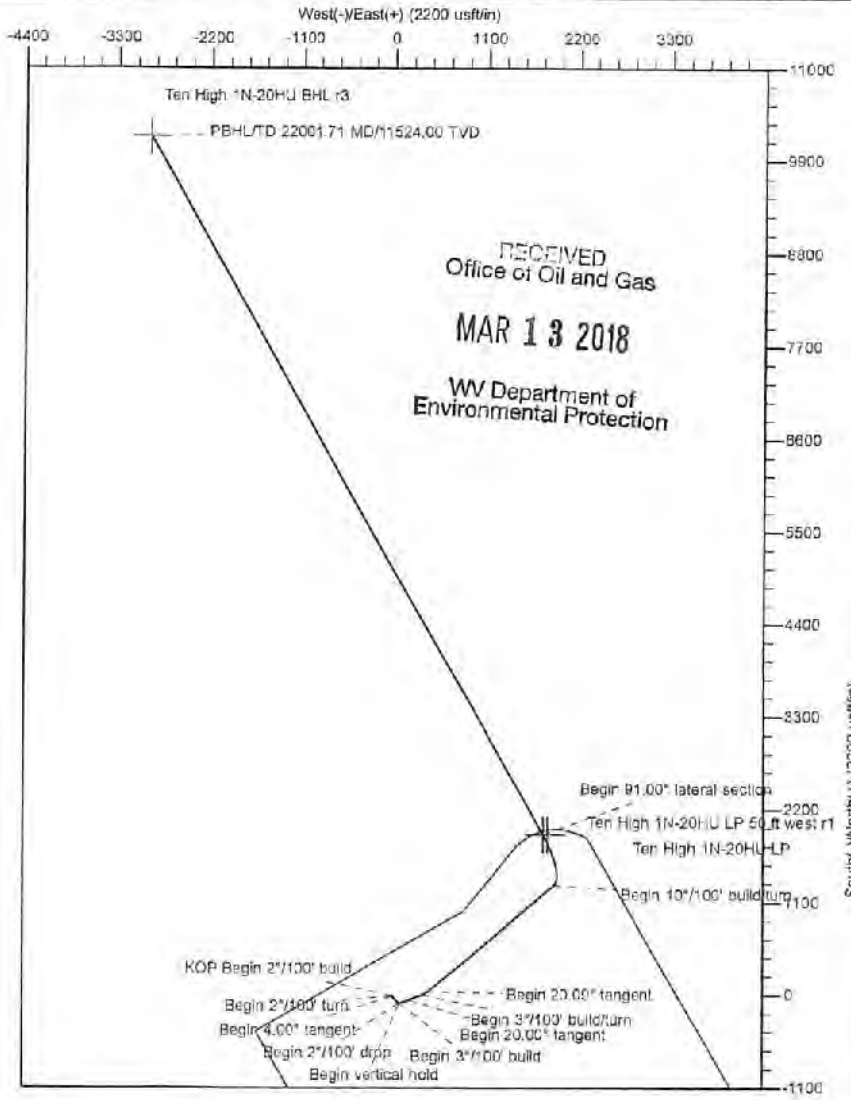
TUG HILL
OPERATING

Well: Ten High 1N-20HU (N)
Site: Ten High
Project: Marshall County, West Virginia
Design: rev3



Admits to Grid North
True North: -0.20°
Magnetic North: -8.93°

Magnetic Field
Strength: 52131.8nT
Dip Angle: 66.63°
Date: 11/16/2017
Model: IGRF2015



SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +EA/-W | Ddeg | TFace | VSec | Annotation |
|-----|----------|-------|--------|----------|----------|----------|-------|---------|---------|---------------------------------|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 1300.00 | 0.00 | 0.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP Begin 2 1/100' build |
| 3 | 1500.00 | 4.00 | 166.00 | 1499.84 | -6.74 | 1.81 | 2.00 | 165.00 | -6.98 | Begin 2 1/100' turn |
| 4 | 1603.48 | 4.00 | 135.00 | 1503.05 | -12.76 | 5.29 | 2.00 | -104.97 | -13.74 | Begin 4.00' tangent |
| 5 | 3220.69 | 4.00 | 135.00 | 3216.34 | -22.55 | 85.06 | 0.00 | 0.00 | -112.44 | Begin 2 1/100' drop |
| 6 | 3420.69 | 0.00 | 135.00 | 3416.16 | -67.48 | 90.00 | 2.00 | 180.00 | -118.54 | Begin vertical hold section |
| 7 | 4604.51 | 0.00 | 135.00 | 4500.00 | -67.48 | 90.00 | 0.00 | 135.00 | -118.54 | Begin 3 1/100' build |
| 8 | 5171.17 | 20.00 | 70.00 | 5153.21 | -59.06 | 198.23 | 3.00 | 70.00 | -110.57 | Begin 20.00' tangent |
| 9 | 5871.17 | 20.00 | 70.00 | 5823.06 | 0.40 | 358.93 | 0.00 | 0.00 | -88.72 | Begin 3 1/100' build/turn |
| 10 | 5901.05 | 20.00 | 49.79 | 5839.27 | 39.38 | 426.10 | 3.00 | -88.74 | -78.80 | Begin 20.00' tangent |
| 11 | 11694.19 | 20.00 | 49.79 | 11165.31 | 1302.04 | 1919.75 | 0.00 | 0.00 | 721.34 | Begin 10 1/100' build/turn |
| 12 | 12487.52 | 91.00 | 330.34 | 11690.00 | 1896.49 | 1792.31 | 10.00 | -79.74 | 1329.71 | Begin 91.00' lateral section |
| 13 | 22001.71 | 91.00 | 330.34 | 11524.00 | 10181.95 | -2925.15 | 0.00 | 0.00 | 0593.60 | PBHLTD 22001.71 MD/11524.00 TVD |

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
Depth Reference: GL @ 1310.00usft

Northing 14456514.04 Easting 1730045.49 Latitude 39.80672175 Longitude -80.65086356

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.93

Area of Review**Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

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MAR 13 2018

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Environmental Protection

Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits

Permit well - Ten High 1N-13HU

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots

Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation

| API Number | Operator Name | Total Depth | Perforated Fms | Producing zones not perforated | Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation | Comments |
|------------|------------------------------------------------|--------------------|----------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 4705101935 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101944 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101945 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101943 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101964 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101973 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permit submitted Marcellus well. Not yet drilled |
| 4705101974 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permit submitted Marcellus well. Not yet drilled |
| 4705101975 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permit submitted Marcellus well. Not yet drilled |
| 4705101976 | Tug Hill Operating | 6737' TVD planned | None | None | No, Permit submitted Marcellus well | Permit submitted Marcellus well. Not yet drilled |
| 4705101960 | Tug Hill Operating | 11878' TVD planned | None | None | No, Permit submitted Utica well | Permit submitted Utica well. Not yet drilled |
| 4705101961 | Tug Hill Operating | 11878' TVD planned | None | None | No, Permit submitted Utica well | Permit submitted Utica well. Not yet drilled |
| 4705101965 | Tug Hill Operating | 11878' TVD planned | None | None | No, Permit submitted Utica well | Permit submitted Utica well. Not yet drilled |
| 4705101966 | Tug Hill Operating | 11878' TVD planned | None | None | No, Permit submitted Utica well | Permit submitted Utica well. Not yet drilled |
| 4705101934 | Tug Hill | 6737' TVD planned | None | None | No, Permitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705101934 | Tug Hill | 6737' TVD planned | None | None | No, Permitted Marcellus well | Permitted Marcellus well. Not yet drilled |
| 4705100837 | Manufacturer's Light and Heat/McElroy Coal Co. | Unknown | Unknown | Unknown | Unknown but unlikely, Appears to be an old shallow well, now plugged | Well records are incomplete. Well plugged 1/20/1999 |

Well: County = 51 Permit = 00837

| API | COUNTY | PERMIT | STATUS | SURFACE | OWNER | WELL_NUM | CO_NUM | LEASE | LEASE_NUM | MINERAL_OWN | OPERATOR | AT_COMPLETION | PROP_TO | PROP_FTR | PROP_EST_WF |
|------------|--------|--------|----------|---------|----------------|----------|--------|-------|-----------|-------------|--------------------|---------------|---------|----------|-------------|
| 4705100837 | 51 | 00837 | Plugging | Surface | Jones L. Pines | | | | | | Tug Hill Operating | | | | |

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Planning Report - Geographic

| | | | |
|------------------|--------------------------------|-------------------------------------|---------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| | | | |
|--------------------|------------------------------------------------|----------------------|----------------|
| Project | Marshall County, West Virginia | | |
| Map System: | Universal Transverse Mercator (US Survey Feet) | System Datum: | Mean Sea Level |
| Geo Datum: | NAD83 West Virginia - HARN | | |
| Map Zone: | Zone 17N (84 W to 78 W) | | |

| | | | | | |
|------------------------------|-----------|---------------------|--------------------|--------------------------|--------------|
| Site | Ten High | | | | |
| Site Position: | | Northing: | 14,456,545.80 usft | Latitude: | 39.80680885 |
| From: | Lat/Long | Easting: | 1,730,001.41 usft | Longitude: | -80.68101011 |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.20 ° |

| | | | | | | |
|-----------------------------|----------------------|-----------|----------------------------|--------------------|----------------------|---------------|
| Well | Ten High 1N-20HU (N) | | | | | |
| Well Position | +N/-S | 0.00 usft | Northing: | 14,456,514.04 usft | Latitude: | 39.80672175 |
| | +E/-W | 0.00 usft | Easting: | 1,730,045.49 usft | Longitude: | -80.68085356 |
| Position Uncertainty | 0.00 usft | | Wellhead Elevation: | | Ground Level: | 1,310.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Original Hole | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 11/18/2017 | -8.72 | 66.93 | 52,131.76013545 |

| | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| Design | rev3 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
| | 0.00 | 0.00 | 0.00 | 343.97 |

| | | | | |
|---------------------------------|------------------------|--------------------------------|-----------------------|----------------|
| Plan Survey Tool Program | Date | 2/16/2018 | | |
| Depth From (usft) | Depth To (usft) | Survey (Wellbore) | Tool Name | Remarks |
| 1 | 0.00 | 22,001.71 rev3 (Original Hole) | MWD MWD - Standard | |

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|------------------|--------------------------------|-------------------------------------|---------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Plan Sections | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,500.00 | 4.00 | 165.00 | 1,499.84 | -6.74 | 1.81 | 2.00 | 2.00 | 0.00 | 165.00 | |
| 1,603.45 | 4.00 | 135.00 | 1,603.05 | -12.78 | 5.29 | 2.00 | 0.00 | -29.00 | -104.97 | |
| 3,220.69 | 4.00 | 135.00 | 3,216.34 | -92.55 | 65.06 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3,420.69 | 0.00 | 135.00 | 3,416.18 | -97.48 | 90.00 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 4,504.51 | 0.00 | 135.00 | 4,500.00 | -97.48 | 90.00 | 0.00 | 0.00 | 0.00 | 135.00 | |
| 5,171.17 | 20.00 | 70.00 | 5,153.21 | -58.09 | 198.23 | 3.00 | 3.00 | 0.00 | 70.00 | |
| 5,671.17 | 20.00 | 70.00 | 5,623.06 | 0.40 | 358.93 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5,901.05 | 20.09 | 49.79 | 5,839.27 | 39.38 | 426.10 | 3.00 | 0.04 | -8.79 | -98.74 | |
| 11,594.19 | 20.09 | 49.79 | 11,185.91 | 1,302.04 | 1,919.75 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 12,467.53 | 91.00 | 330.34 | 11,690.00 | 1,896.49 | 1,792.61 | 10.00 | 8.12 | -9.10 | -79.74 | Ten High 1N-20HU LF |
| 22,001.71 | 91.00 | 330.34 | 11,524.00 | 10,181.95 | -2,925.15 | 0.00 | 0.00 | 0.00 | 0.00 | Ten High 1N-20HU B |

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|------------------|--------------------------------|-------------------------------------|-----------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Planned Survey | | | | | | | | | | |
|------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 14,456,514.04 | 1,730,045.49 | 39.80672175 | -80.68085356 | |
| KOP Begin 2°/100' build | | | | | | | | | | |
| 1,400.00 | 2.00 | 165.00 | 1,399.98 | -1.69 | 0.45 | 14,456,512.36 | 1,730,045.95 | 39.80671712 | -80.68085197 | |
| 1,500.00 | 4.00 | 165.00 | 1,499.84 | -6.74 | 1.81 | 14,456,507.30 | 1,730,047.30 | 39.80670322 | -80.68084721 | |
| Begin 2°/100' turn | | | | | | | | | | |
| 1,600.00 | 3.98 | 135.96 | 1,599.61 | -12.61 | 5.12 | 14,456,501.44 | 1,730,050.62 | 39.80668708 | -80.68083548 | |
| 1,603.45 | 4.00 | 135.00 | 1,603.05 | -12.78 | 5.29 | 14,456,501.27 | 1,730,050.79 | 39.80668661 | -80.68083468 | |
| Begin 4.00° tangent | | | | | | | | | | |
| 1,700.00 | 4.00 | 135.00 | 1,699.36 | -17.54 | 10.05 | 14,456,496.50 | 1,730,055.55 | 39.80667348 | -80.68081798 | |
| 1,800.00 | 4.00 | 135.00 | 1,799.12 | -22.47 | 14.99 | 14,456,491.57 | 1,730,060.48 | 39.80665989 | -80.68080048 | |
| 1,900.00 | 4.00 | 135.00 | 1,898.87 | -27.41 | 19.92 | 14,456,486.64 | 1,730,065.41 | 39.80664630 | -80.68078298 | |
| 2,000.00 | 4.00 | 135.00 | 1,998.63 | -32.34 | 24.85 | 14,456,481.71 | 1,730,070.35 | 39.80663270 | -80.68076548 | |
| 2,100.00 | 4.00 | 135.00 | 2,098.39 | -37.27 | 29.78 | 14,456,476.77 | 1,730,075.28 | 39.80661911 | -80.68074798 | |
| 2,200.00 | 4.00 | 135.00 | 2,198.14 | -42.20 | 34.72 | 14,456,471.84 | 1,730,080.21 | 39.80660551 | -80.68073048 | |
| 2,300.00 | 4.00 | 135.00 | 2,297.90 | -47.14 | 39.65 | 14,456,466.91 | 1,730,085.14 | 39.80659192 | -80.68071298 | |
| 2,400.00 | 4.00 | 135.00 | 2,397.66 | -52.07 | 44.58 | 14,456,461.98 | 1,730,090.08 | 39.80657832 | -80.68069548 | |
| 2,500.00 | 4.00 | 135.00 | 2,497.41 | -57.00 | 49.51 | 14,456,457.04 | 1,730,095.01 | 39.80656473 | -80.68067798 | |
| 2,600.00 | 4.00 | 135.00 | 2,597.17 | -61.93 | 54.45 | 14,456,452.11 | 1,730,099.94 | 39.80655114 | -80.68066048 | |
| 2,700.00 | 4.00 | 135.00 | 2,696.93 | -66.87 | 59.38 | 14,456,447.18 | 1,730,104.87 | 39.80653754 | -80.68064298 | |
| 2,800.00 | 4.00 | 135.00 | 2,796.68 | -71.80 | 64.31 | 14,456,442.25 | 1,730,109.81 | 39.80652395 | -80.68062548 | |
| 2,900.00 | 4.00 | 135.00 | 2,896.44 | -76.73 | 69.24 | 14,456,437.31 | 1,730,114.74 | 39.80651035 | -80.68060798 | |
| 3,000.00 | 4.00 | 135.00 | 2,996.19 | -81.66 | 74.18 | 14,456,432.38 | 1,730,119.67 | 39.80649676 | -80.68059048 | |
| 3,100.00 | 4.00 | 135.00 | 3,095.95 | -86.60 | 79.11 | 14,456,427.45 | 1,730,124.60 | 39.80648316 | -80.68057298 | |
| 3,200.00 | 4.00 | 135.00 | 3,195.71 | -91.53 | 84.04 | 14,456,422.52 | 1,730,129.54 | 39.80646957 | -80.68055547 | |
| 3,220.69 | 4.00 | 135.00 | 3,216.34 | -92.55 | 85.05 | 14,456,421.49 | 1,730,130.56 | 39.80646676 | -80.68055185 | |
| Begin 2°/100' drop | | | | | | | | | | |
| 3,300.00 | 2.41 | 135.00 | 3,295.53 | -95.69 | 88.20 | 14,456,418.36 | 1,730,133.69 | 39.80645811 | -80.68054072 | |
| 3,400.00 | 0.41 | 135.00 | 3,395.50 | -97.43 | 89.94 | 14,456,416.61 | 1,730,135.44 | 39.80645330 | -80.68053453 | |
| 3,420.69 | 0.00 | 135.00 | 3,416.18 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| Begin vertical hold section | | | | | | | | | | |
| 3,500.00 | 0.00 | 0.00 | 3,495.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 3,600.00 | 0.00 | 0.00 | 3,595.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 3,700.00 | 0.00 | 0.00 | 3,695.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 3,800.00 | 0.00 | 0.00 | 3,795.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 3,900.00 | 0.00 | 0.00 | 3,895.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,000.00 | 0.00 | 0.00 | 3,995.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,100.00 | 0.00 | 0.00 | 4,095.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,200.00 | 0.00 | 0.00 | 4,195.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,300.00 | 0.00 | 0.00 | 4,295.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,400.00 | 0.00 | 0.00 | 4,395.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| 4,500.00 | 0.00 | 0.00 | 4,495.49 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |



Planning Report - Geographic

WV Department of Environmental Protection

| | | | |
|------------------|--------------------------------|-------------------------------------|---------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Planned Survey | | | | | | | | | | |
|---------------------------------|-----------------|-------------|-----------------------|-------------|-------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N-S (usft) | +E-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 4,504.51 | 0.00 | 0.00 | 4,500.00 | -97.48 | 90.00 | 14,456,416.56 | 1,730,135.49 | 39.80645316 | -80.68053435 | |
| Begin 3°/100' build | | | | | | | | | | |
| 4,600.00 | 2.86 | 70.00 | 4,595.46 | -96.67 | 92.24 | 14,456,417.38 | 1,730,137.73 | 39.80645538 | -80.68052635 | |
| 4,700.00 | 5.86 | 70.00 | 4,695.15 | -94.06 | 99.39 | 14,456,419.98 | 1,730,144.68 | 39.80646246 | -80.68050085 | |
| 4,800.00 | 8.86 | 70.00 | 4,794.32 | -89.68 | 111.44 | 14,456,424.36 | 1,730,156.93 | 39.80647438 | -80.68045791 | |
| 4,900.00 | 11.86 | 70.00 | 4,892.67 | -83.53 | 128.34 | 14,456,430.52 | 1,730,173.83 | 39.80649111 | -80.68039764 | |
| 5,000.00 | 14.86 | 70.00 | 4,989.96 | -75.62 | 150.06 | 14,456,438.42 | 1,730,195.55 | 39.80651260 | -80.68032021 | |
| 5,100.00 | 17.86 | 70.00 | 5,085.89 | -65.99 | 176.53 | 14,456,448.06 | 1,730,222.02 | 39.80653890 | -80.68022682 | |
| 5,171.17 | 20.00 | 70.00 | 5,153.21 | -58.09 | 198.23 | 14,456,455.95 | 1,730,243.72 | 39.80656028 | -80.68014846 | |
| Begin 20.00° tangent | | | | | | | | | | |
| 5,200.00 | 20.00 | 70.00 | 5,190.30 | -54.72 | 207.49 | 14,456,459.33 | 1,730,252.99 | 39.80656945 | -80.68011543 | |
| 5,300.00 | 20.00 | 70.00 | 5,274.27 | -43.02 | 239.83 | 14,456,471.02 | 1,730,285.13 | 39.80660126 | -80.68000084 | |
| 5,400.00 | 20.00 | 70.00 | 5,368.24 | -31.32 | 271.77 | 14,456,482.72 | 1,730,317.27 | 39.80663307 | -80.67989625 | |
| 5,500.00 | 20.00 | 70.00 | 5,462.21 | -19.62 | 303.91 | 14,456,494.42 | 1,730,349.41 | 39.80666488 | -80.67977167 | |
| 5,600.00 | 20.00 | 70.00 | 5,556.18 | -7.93 | 336.05 | 14,456,506.12 | 1,730,381.55 | 39.80669669 | -80.67965708 | |
| 5,671.17 | 20.00 | 70.00 | 5,623.06 | 0.40 | 358.93 | 14,456,514.44 | 1,730,404.42 | 39.80671933 | -80.67957552 | |
| Begin 3°/100' build/turn | | | | | | | | | | |
| 5,700.00 | 19.89 | 67.49 | 5,650.16 | 3.96 | 368.09 | 14,456,518.01 | 1,730,413.58 | 39.80672902 | -80.67954288 | |
| 5,800.00 | 19.77 | 58.64 | 5,744.25 | 19.28 | 398.25 | 14,456,533.32 | 1,730,443.74 | 39.80677079 | -80.67943527 | |
| 5,900.00 | 20.09 | 49.88 | 5,838.28 | 39.15 | 425.83 | 14,456,553.19 | 1,730,471.32 | 39.80682509 | -80.67933681 | |
| 5,901.03 | 20.09 | 49.79 | 5,839.25 | 39.38 | 426.10 | 14,456,553.42 | 1,730,471.59 | 39.80682571 | -80.67933585 | |
| Begin 20.09° tangent | | | | | | | | | | |
| 5,901.05 | 20.09 | 49.79 | 5,839.27 | 39.38 | 426.10 | 14,456,553.43 | 1,730,471.60 | 39.80682573 | -80.67933583 | |
| 6,000.00 | 20.09 | 49.79 | 5,932.20 | 61.33 | 452.06 | 14,456,575.37 | 1,730,497.56 | 39.80688574 | -80.67924311 | |
| 6,100.00 | 20.09 | 49.79 | 6,026.11 | 83.51 | 478.30 | 14,456,597.55 | 1,730,523.79 | 39.80694639 | -80.67914941 | |
| 6,200.00 | 20.09 | 49.79 | 6,120.02 | 105.69 | 504.54 | 14,456,619.73 | 1,730,550.03 | 39.80700704 | -80.67905571 | |
| 6,300.00 | 20.09 | 49.79 | 6,213.94 | 127.86 | 530.77 | 14,456,641.91 | 1,730,576.26 | 39.80706769 | -80.67896201 | |
| 6,400.00 | 20.09 | 49.79 | 6,307.85 | 150.04 | 557.01 | 14,456,664.09 | 1,730,602.50 | 39.80712834 | -80.67886831 | |
| 6,500.00 | 20.09 | 49.79 | 6,401.77 | 172.22 | 583.24 | 14,456,686.27 | 1,730,628.74 | 39.80718898 | -80.67877460 | |
| 6,600.00 | 20.09 | 49.79 | 6,495.68 | 194.40 | 609.48 | 14,456,708.44 | 1,730,654.97 | 39.80724963 | -80.67868090 | |
| 6,700.00 | 20.09 | 49.79 | 6,589.59 | 216.58 | 635.71 | 14,456,730.62 | 1,730,681.21 | 39.80731028 | -80.67858720 | |
| 6,800.00 | 20.09 | 49.79 | 6,683.51 | 238.76 | 661.95 | 14,456,752.80 | 1,730,707.44 | 39.80737093 | -80.67849350 | |
| 6,900.00 | 20.09 | 49.79 | 6,777.42 | 260.94 | 688.19 | 14,456,774.98 | 1,730,733.68 | 39.80743158 | -80.67839979 | |
| 7,000.00 | 20.09 | 49.79 | 6,871.33 | 283.11 | 714.42 | 14,456,797.16 | 1,730,759.92 | 39.80749223 | -80.67830609 | |
| 7,100.00 | 20.09 | 49.79 | 6,965.25 | 305.29 | 740.66 | 14,456,819.34 | 1,730,786.15 | 39.80755288 | -80.67821239 | |
| 7,200.00 | 20.09 | 49.79 | 7,059.16 | 327.47 | 766.89 | 14,456,841.51 | 1,730,812.39 | 39.80761353 | -80.67811869 | |
| 7,300.00 | 20.09 | 49.79 | 7,153.08 | 349.65 | 793.13 | 14,456,863.69 | 1,730,838.62 | 39.80767417 | -80.67802498 | |
| 7,400.00 | 20.09 | 49.79 | 7,246.99 | 371.83 | 819.37 | 14,456,885.87 | 1,730,864.86 | 39.80773482 | -80.67793128 | |
| 7,500.00 | 20.09 | 49.79 | 7,340.90 | 394.01 | 845.60 | 14,456,908.05 | 1,730,891.09 | 39.80779547 | -80.67783757 | |
| 7,600.00 | 20.09 | 49.79 | 7,434.82 | 416.19 | 871.84 | 14,456,930.23 | 1,730,917.33 | 39.80785612 | -80.67774387 | |
| 7,700.00 | 20.09 | 49.79 | 7,528.73 | 438.36 | 898.07 | 14,456,952.41 | 1,730,943.57 | 39.80791677 | -80.67765017 | |
| 7,800.00 | 20.09 | 49.79 | 7,622.64 | 460.54 | 924.31 | 14,456,974.59 | 1,730,969.80 | 39.80797742 | -80.67755646 | |
| 7,900.00 | 20.09 | 49.79 | 7,716.56 | 482.72 | 950.54 | 14,456,996.76 | 1,730,996.04 | 39.80803806 | -80.67746276 | |
| 8,000.00 | 20.09 | 49.79 | 7,810.47 | 504.90 | 976.78 | 14,457,018.94 | 1,731,022.27 | 39.80809871 | -80.67736905 | |
| 8,100.00 | 20.09 | 49.79 | 7,904.39 | 527.08 | 1,003.02 | 14,457,041.12 | 1,731,048.51 | 39.80815936 | -80.67727535 | |
| 8,200.00 | 20.09 | 49.79 | 7,998.30 | 549.26 | 1,029.25 | 14,457,063.30 | 1,731,074.75 | 39.80822001 | -80.67718164 | |
| 8,300.00 | 20.09 | 49.79 | 8,092.21 | 571.44 | 1,055.49 | 14,457,085.48 | 1,731,100.98 | 39.80828065 | -80.67708794 | |
| 8,400.00 | 20.09 | 49.79 | 8,186.13 | 593.61 | 1,081.72 | 14,457,107.66 | 1,731,127.22 | 39.80834130 | -80.67699423 | |
| 8,500.00 | 20.09 | 49.79 | 8,280.04 | 615.79 | 1,107.96 | 14,457,129.84 | 1,731,153.45 | 39.80840195 | -80.67690053 | |
| 8,600.00 | 20.09 | 49.79 | 8,373.95 | 637.97 | 1,134.20 | 14,457,152.01 | 1,731,179.69 | 39.80846260 | -80.67680682 | |
| 8,700.00 | 20.09 | 49.79 | 8,467.87 | 660.15 | 1,160.43 | 14,457,174.19 | 1,731,205.92 | 39.80852325 | -80.67671312 | |
| 8,800.00 | 20.09 | 49.79 | 8,561.78 | 682.33 | 1,186.67 | 14,457,196.37 | 1,731,232.16 | 39.80858389 | -80.67661941 | |
| 8,900.00 | 20.09 | 49.79 | 8,655.70 | 704.51 | 1,212.90 | 14,457,218.55 | 1,731,258.40 | 39.80864454 | -80.67652571 | |
| 9,000.00 | 20.09 | 49.79 | 8,749.61 | 726.69 | 1,239.14 | 14,457,240.73 | 1,731,284.63 | 39.80870519 | -80.67643200 | |

51-02021

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Planning Report - Geographic

WV Department of
Environmental Protection

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Ten High
Well: Ten High 1N-20HU (N)
Wellbore: Original Hole
Design: rev3

Local Co-ordinate Reference: Well Ten High 1N-20HU
TVD Reference: GL @ 1310.00usft
MD Reference: GL @ 1310.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

| Planned Survey | | | | | | | | | | |
|-------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 9,100.00 | 20.09 | 49.79 | 8,843.52 | 748.86 | 1,265.37 | 14,457,262.91 | 1,731,310.67 | 39.80876583 | -80.67633829 | |
| 9,200.00 | 20.09 | 49.79 | 8,937.44 | 771.04 | 1,291.61 | 14,457,285.09 | 1,731,337.10 | 39.80882648 | -80.67624459 | |
| 9,300.00 | 20.09 | 49.79 | 9,031.35 | 793.22 | 1,317.85 | 14,457,307.26 | 1,731,363.34 | 39.80888713 | -80.67615088 | |
| 9,400.00 | 20.09 | 49.79 | 9,125.26 | 815.40 | 1,344.08 | 14,457,329.44 | 1,731,389.58 | 39.80894777 | -80.67605717 | |
| 9,500.00 | 20.09 | 49.79 | 9,219.18 | 837.58 | 1,370.32 | 14,457,351.62 | 1,731,415.81 | 39.80900842 | -80.67596347 | |
| 9,600.00 | 20.09 | 49.79 | 9,313.09 | 859.76 | 1,396.55 | 14,457,373.80 | 1,731,442.05 | 39.80906907 | -80.67586976 | |
| 9,700.00 | 20.09 | 49.79 | 9,407.01 | 881.94 | 1,422.79 | 14,457,395.98 | 1,731,468.28 | 39.80912971 | -80.67577605 | |
| 9,800.00 | 20.09 | 49.79 | 9,500.92 | 904.11 | 1,449.03 | 14,457,418.16 | 1,731,494.52 | 39.80919036 | -80.67568235 | |
| 9,900.00 | 20.09 | 49.79 | 9,594.83 | 926.29 | 1,475.26 | 14,457,440.34 | 1,731,520.75 | 39.80925101 | -80.67558864 | |
| 10,000.00 | 20.09 | 49.79 | 9,688.75 | 948.47 | 1,501.50 | 14,457,462.51 | 1,731,546.99 | 39.80931165 | -80.67549493 | |
| 10,100.00 | 20.09 | 49.79 | 9,782.66 | 970.65 | 1,527.73 | 14,457,484.69 | 1,731,573.23 | 39.80937230 | -80.67540122 | |
| 10,200.00 | 20.09 | 49.79 | 9,876.57 | 992.83 | 1,553.97 | 14,457,506.87 | 1,731,599.46 | 39.80943295 | -80.67530751 | |
| 10,300.00 | 20.09 | 49.79 | 9,970.49 | 1,015.01 | 1,580.20 | 14,457,529.05 | 1,731,625.70 | 39.80949359 | -80.67521381 | |
| 10,400.00 | 20.09 | 49.79 | 10,064.40 | 1,037.19 | 1,606.44 | 14,457,551.23 | 1,731,651.93 | 39.80955424 | -80.67512010 | |
| 10,500.00 | 20.09 | 49.79 | 10,158.32 | 1,059.36 | 1,632.68 | 14,457,573.41 | 1,731,678.17 | 39.80961489 | -80.67502639 | |
| 10,600.00 | 20.09 | 49.79 | 10,252.23 | 1,081.54 | 1,658.91 | 14,457,595.59 | 1,731,704.41 | 39.80967553 | -80.67493268 | |
| 10,700.00 | 20.09 | 49.79 | 10,346.14 | 1,103.72 | 1,685.15 | 14,457,617.76 | 1,731,730.64 | 39.80973618 | -80.67483897 | |
| 10,800.00 | 20.09 | 49.79 | 10,440.06 | 1,125.90 | 1,711.38 | 14,457,639.94 | 1,731,756.88 | 39.80979682 | -80.67474526 | |
| 10,900.00 | 20.09 | 49.79 | 10,533.97 | 1,148.06 | 1,737.62 | 14,457,662.12 | 1,731,783.11 | 39.80985747 | -80.67465155 | |
| 11,000.00 | 20.09 | 49.79 | 10,627.88 | 1,170.26 | 1,763.86 | 14,457,684.30 | 1,731,809.35 | 39.80991811 | -80.67455784 | |
| 11,100.00 | 20.09 | 49.79 | 10,721.80 | 1,192.44 | 1,790.09 | 14,457,706.48 | 1,731,835.58 | 39.80997876 | -80.67446413 | |
| 11,200.00 | 20.09 | 49.79 | 10,815.71 | 1,214.61 | 1,816.33 | 14,457,728.66 | 1,731,861.82 | 39.81003941 | -80.67437042 | |
| 11,300.00 | 20.09 | 49.79 | 10,909.63 | 1,236.79 | 1,842.56 | 14,457,750.84 | 1,731,888.06 | 39.81010005 | -80.67427671 | |
| 11,400.00 | 20.09 | 49.79 | 11,003.54 | 1,258.97 | 1,868.80 | 14,457,773.01 | 1,731,914.29 | 39.81016070 | -80.67418300 | |
| 11,500.00 | 20.09 | 49.79 | 11,097.45 | 1,281.15 | 1,895.03 | 14,457,795.19 | 1,731,940.53 | 39.81022134 | -80.67408929 | |
| 11,594.19 | 20.09 | 49.79 | 11,185.91 | 1,302.04 | 1,919.75 | 14,457,816.08 | 1,731,965.24 | 39.81027846 | -80.67400103 | |
| Begin 10°/100' build/turn | | | | | | | | | | |
| 11,600.00 | 20.20 | 48.13 | 11,191.37 | 1,303.35 | 1,921.26 | 14,457,817.40 | 1,731,966.75 | 39.81028206 | -80.67399564 | |
| 11,700.00 | 24.23 | 23.66 | 11,284.12 | 1,333.75 | 1,942.40 | 14,457,847.79 | 1,731,987.90 | 39.81036531 | -80.67391994 | |
| 11,800.00 | 30.94 | 7.51 | 11,372.83 | 1,378.14 | 1,954.03 | 14,457,892.18 | 1,731,999.52 | 39.81048710 | -80.67387797 | |
| 11,900.00 | 38.98 | 357.05 | 11,454.79 | 1,435.18 | 1,955.77 | 14,457,949.22 | 1,732,001.27 | 39.81064374 | -80.67387101 | |
| 12,000.00 | 47.66 | 349.80 | 11,527.52 | 1,503.14 | 1,947.59 | 14,458,017.18 | 1,731,993.08 | 39.81083044 | -80.67389928 | |
| 12,100.00 | 56.70 | 344.35 | 11,588.80 | 1,579.95 | 1,929.72 | 14,458,083.99 | 1,731,975.21 | 39.81104156 | -80.67396191 | |
| 12,200.00 | 65.92 | 339.93 | 11,636.78 | 1,663.27 | 1,902.71 | 14,458,177.32 | 1,731,948.20 | 39.81127067 | -80.67405700 | |
| 12,300.00 | 75.25 | 336.12 | 11,689.99 | 1,750.59 | 1,867.38 | 14,458,264.63 | 1,731,912.88 | 39.81151080 | -80.67418167 | |
| 12,400.00 | 84.64 | 332.63 | 11,697.43 | 1,839.23 | 1,824.81 | 14,458,353.28 | 1,731,870.31 | 39.81175467 | -80.67433212 | |
| 12,467.53 | 91.00 | 330.34 | 11,690.00 | 1,898.49 | 1,792.61 | 14,458,412.53 | 1,731,838.10 | 39.81191773 | -80.67444602 | |
| Begin 91.00° lateral section | | | | | | | | | | |
| 12,500.00 | 91.00 | 330.34 | 11,689.43 | 1,926.70 | 1,776.54 | 14,458,440.74 | 1,731,822.04 | 39.81199536 | -80.67450287 | |
| 12,600.00 | 91.00 | 330.34 | 11,687.69 | 2,013.58 | 1,727.06 | 14,458,527.62 | 1,731,772.55 | 39.81223445 | -80.67467795 | |
| 12,700.00 | 91.00 | 330.34 | 11,685.95 | 2,100.46 | 1,677.58 | 14,458,614.51 | 1,731,723.07 | 39.81247354 | -80.67485303 | |
| 12,800.00 | 91.00 | 330.34 | 11,684.21 | 2,187.35 | 1,628.09 | 14,458,701.39 | 1,731,673.59 | 39.81271264 | -80.67502812 | |
| 12,900.00 | 91.00 | 330.34 | 11,682.47 | 2,274.23 | 1,578.61 | 14,458,788.27 | 1,731,624.11 | 39.81295173 | -80.67520320 | |
| 13,000.00 | 91.00 | 330.34 | 11,680.73 | 2,361.11 | 1,529.13 | 14,458,875.15 | 1,731,574.62 | 39.81319082 | -80.67537829 | |
| 13,100.00 | 91.00 | 330.34 | 11,678.99 | 2,447.99 | 1,479.65 | 14,458,962.03 | 1,731,525.14 | 39.81342991 | -80.67555338 | |
| 13,200.00 | 91.00 | 330.34 | 11,677.25 | 2,534.87 | 1,430.16 | 14,459,048.92 | 1,731,475.66 | 39.81366900 | -80.67572847 | |
| 13,300.00 | 91.00 | 330.34 | 11,675.51 | 2,621.75 | 1,380.68 | 14,459,135.80 | 1,731,426.17 | 39.81390809 | -80.67590355 | |
| 13,400.00 | 91.00 | 330.34 | 11,673.76 | 2,708.64 | 1,331.20 | 14,459,222.68 | 1,731,376.69 | 39.81414718 | -80.67607865 | |
| 13,500.00 | 91.00 | 330.34 | 11,672.02 | 2,795.52 | 1,281.72 | 14,459,309.56 | 1,731,327.21 | 39.81438627 | -80.67625374 | |
| 13,600.00 | 91.00 | 330.34 | 11,670.28 | 2,882.40 | 1,232.23 | 14,459,396.44 | 1,731,277.73 | 39.81462536 | -80.67642883 | |
| 13,700.00 | 91.00 | 330.34 | 11,668.54 | 2,969.28 | 1,182.75 | 14,459,483.32 | 1,731,228.24 | 39.81486445 | -80.67660393 | |
| 13,800.00 | 91.00 | 330.34 | 11,666.80 | 3,056.16 | 1,133.27 | 14,459,570.21 | 1,731,178.76 | 39.81510354 | -80.67677902 | |
| 13,900.00 | 91.00 | 330.34 | 11,665.06 | 3,143.04 | 1,083.79 | 14,459,657.09 | 1,731,129.28 | 39.81534263 | -80.67695412 | |
| 14,000.00 | 91.00 | 330.34 | 11,663.32 | 3,229.93 | 1,034.30 | 14,459,743.97 | 1,731,079.80 | 39.81558172 | -80.67712922 | |

MAR 13 2018



Planning Report - Geographic

WV Department of
Environmental Protection

| | | | |
|-----------|--------------------------------|------------------------------|---------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Planned Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 14,100.00 | 91.00 | 330.34 | 11,661.58 | 3,316.81 | 984.82 | 14,459,830.85 | 1,731,030.31 | 39.81582080 | -80.67730432 |
| 14,200.00 | 91.00 | 330.34 | 11,659.84 | 3,403.69 | 935.34 | 14,459,917.73 | 1,730,980.83 | 39.81605989 | -80.67747942 |
| 14,300.00 | 91.00 | 330.34 | 11,658.10 | 3,490.57 | 885.86 | 14,460,004.61 | 1,730,931.35 | 39.81629898 | -80.67765452 |
| 14,400.00 | 91.00 | 330.34 | 11,656.35 | 3,577.45 | 836.37 | 14,460,091.50 | 1,730,881.87 | 39.81653807 | -80.67782962 |
| 14,500.00 | 91.00 | 330.34 | 11,654.61 | 3,664.34 | 786.89 | 14,460,178.38 | 1,730,832.38 | 39.81677715 | -80.67800473 |
| 14,600.00 | 91.00 | 330.34 | 11,652.87 | 3,751.22 | 737.41 | 14,460,265.26 | 1,730,782.90 | 39.81701624 | -80.67817983 |
| 14,700.00 | 91.00 | 330.34 | 11,651.13 | 3,838.10 | 687.93 | 14,460,352.14 | 1,730,733.42 | 39.81725533 | -80.67835494 |
| 14,800.00 | 91.00 | 330.34 | 11,649.39 | 3,924.98 | 638.44 | 14,460,439.02 | 1,730,683.94 | 39.81749441 | -80.67853005 |
| 14,900.00 | 91.00 | 330.34 | 11,647.65 | 4,011.86 | 588.96 | 14,460,525.91 | 1,730,634.45 | 39.81773350 | -80.67870516 |
| 15,000.00 | 91.00 | 330.34 | 11,645.91 | 4,098.74 | 539.48 | 14,460,612.79 | 1,730,584.97 | 39.81797259 | -80.67888027 |
| 15,100.00 | 91.00 | 330.34 | 11,644.17 | 4,185.63 | 489.99 | 14,460,699.67 | 1,730,535.49 | 39.81821167 | -80.67905538 |
| 15,200.00 | 91.00 | 330.34 | 11,642.43 | 4,272.51 | 440.51 | 14,460,786.55 | 1,730,486.01 | 39.81845076 | -80.67923049 |
| 15,300.00 | 91.00 | 330.34 | 11,640.68 | 4,359.39 | 391.03 | 14,460,873.43 | 1,730,436.52 | 39.81868984 | -80.67940561 |
| 15,400.00 | 91.00 | 330.34 | 11,638.94 | 4,446.27 | 341.55 | 14,460,960.31 | 1,730,387.04 | 39.81892893 | -80.67958072 |
| 15,500.00 | 91.00 | 330.34 | 11,637.20 | 4,533.15 | 292.06 | 14,461,047.20 | 1,730,337.56 | 39.81916801 | -80.67975584 |
| 15,600.00 | 91.00 | 330.34 | 11,635.46 | 4,620.03 | 242.58 | 14,461,134.08 | 1,730,288.08 | 39.81940709 | -80.67993096 |
| 15,700.00 | 91.00 | 330.34 | 11,633.72 | 4,706.92 | 193.10 | 14,461,220.96 | 1,730,238.59 | 39.81964618 | -80.68010608 |
| 15,800.00 | 91.00 | 330.34 | 11,631.98 | 4,793.80 | 143.62 | 14,461,307.84 | 1,730,189.11 | 39.81988526 | -80.68028120 |
| 15,900.00 | 91.00 | 330.34 | 11,630.24 | 4,880.68 | 94.13 | 14,461,394.72 | 1,730,139.63 | 39.82012435 | -80.68045632 |
| 16,000.00 | 91.00 | 330.34 | 11,628.50 | 4,967.56 | 44.65 | 14,461,481.61 | 1,730,090.15 | 39.82036343 | -80.68063144 |
| 16,100.00 | 91.00 | 330.34 | 11,626.76 | 5,054.44 | -4.83 | 14,461,568.49 | 1,730,040.66 | 39.82060251 | -80.68080656 |
| 16,200.00 | 91.00 | 330.34 | 11,625.01 | 5,141.33 | -54.31 | 14,461,655.37 | 1,729,991.18 | 39.82084159 | -80.68098169 |
| 16,300.00 | 91.00 | 330.34 | 11,623.27 | 5,228.21 | -103.80 | 14,461,742.25 | 1,729,941.70 | 39.82108068 | -80.68115681 |
| 16,400.00 | 91.00 | 330.34 | 11,621.53 | 5,315.09 | -153.28 | 14,461,829.13 | 1,729,892.21 | 39.82131976 | -80.68133194 |
| 16,500.00 | 91.00 | 330.34 | 11,619.79 | 5,401.97 | -202.76 | 14,461,916.01 | 1,729,842.73 | 39.82155884 | -80.68150707 |
| 16,600.00 | 91.00 | 330.34 | 11,618.05 | 5,488.85 | -252.24 | 14,462,002.90 | 1,729,793.25 | 39.82179792 | -80.68168220 |
| 16,700.00 | 91.00 | 330.34 | 11,616.31 | 5,575.73 | -301.73 | 14,462,089.78 | 1,729,743.77 | 39.82203700 | -80.68185733 |
| 16,800.00 | 91.00 | 330.34 | 11,614.57 | 5,662.62 | -351.21 | 14,462,176.66 | 1,729,694.28 | 39.82227608 | -80.68203246 |
| 16,900.00 | 91.00 | 330.34 | 11,612.83 | 5,749.50 | -400.69 | 14,462,263.54 | 1,729,644.80 | 39.82251516 | -80.68220760 |
| 17,000.00 | 91.00 | 330.34 | 11,611.09 | 5,836.38 | -450.17 | 14,462,350.42 | 1,729,595.32 | 39.82275424 | -80.68238273 |
| 17,100.00 | 91.00 | 330.34 | 11,609.34 | 5,923.26 | -499.66 | 14,462,437.30 | 1,729,545.84 | 39.82299332 | -80.68255787 |
| 17,200.00 | 91.00 | 330.34 | 11,607.60 | 6,010.14 | -549.14 | 14,462,524.19 | 1,729,496.35 | 39.82323240 | -80.68273300 |
| 17,300.00 | 91.00 | 330.34 | 11,605.86 | 6,097.03 | -598.62 | 14,462,611.07 | 1,729,446.87 | 39.82347148 | -80.68290814 |
| 17,400.00 | 91.00 | 330.34 | 11,604.12 | 6,183.91 | -648.10 | 14,462,697.95 | 1,729,397.39 | 39.82371056 | -80.68308328 |
| 17,500.00 | 91.00 | 330.34 | 11,602.38 | 6,270.79 | -697.59 | 14,462,784.83 | 1,729,347.91 | 39.82394964 | -80.68325842 |
| 17,600.00 | 91.00 | 330.34 | 11,600.64 | 6,357.67 | -747.07 | 14,462,871.71 | 1,729,298.42 | 39.82418872 | -80.68343357 |
| 17,700.00 | 91.00 | 330.34 | 11,598.90 | 6,444.55 | -796.55 | 14,462,958.60 | 1,729,248.94 | 39.82442780 | -80.68360871 |
| 17,800.00 | 91.00 | 330.34 | 11,597.16 | 6,531.43 | -846.03 | 14,463,045.48 | 1,729,199.45 | 39.82466688 | -80.68378385 |
| 17,900.00 | 91.00 | 330.34 | 11,595.42 | 6,618.32 | -895.52 | 14,463,132.36 | 1,729,149.98 | 39.82490596 | -80.68395900 |
| 18,000.00 | 91.00 | 330.34 | 11,593.67 | 6,705.20 | -945.00 | 14,463,219.24 | 1,729,100.49 | 39.82514503 | -80.68413414 |
| 18,100.00 | 91.00 | 330.34 | 11,591.93 | 6,792.08 | -994.48 | 14,463,306.12 | 1,729,051.01 | 39.82538411 | -80.68430929 |
| 18,200.00 | 91.00 | 330.34 | 11,590.19 | 6,878.96 | -1,043.96 | 14,463,393.00 | 1,729,001.53 | 39.82562319 | -80.68448444 |
| 18,300.00 | 91.00 | 330.34 | 11,588.45 | 6,965.84 | -1,093.45 | 14,463,479.89 | 1,728,952.05 | 39.82586226 | -80.68465959 |
| 18,400.00 | 91.00 | 330.34 | 11,586.71 | 7,052.72 | -1,142.93 | 14,463,566.77 | 1,728,902.56 | 39.82610134 | -80.68483474 |
| 18,500.00 | 91.00 | 330.34 | 11,584.97 | 7,139.61 | -1,192.41 | 14,463,653.65 | 1,728,853.08 | 39.82634042 | -80.68500990 |
| 18,600.00 | 91.00 | 330.34 | 11,583.23 | 7,226.49 | -1,241.90 | 14,463,740.53 | 1,728,803.60 | 39.82657949 | -80.68518505 |
| 18,700.00 | 91.00 | 330.34 | 11,581.49 | 7,313.37 | -1,291.38 | 14,463,827.41 | 1,728,754.12 | 39.82681857 | -80.68536021 |
| 18,800.00 | 91.00 | 330.34 | 11,579.75 | 7,400.25 | -1,340.86 | 14,463,914.30 | 1,728,704.63 | 39.82705764 | -80.68553536 |
| 18,900.00 | 91.00 | 330.34 | 11,578.00 | 7,487.13 | -1,390.34 | 14,464,001.18 | 1,728,655.15 | 39.82729672 | -80.68571052 |
| 19,000.00 | 91.00 | 330.34 | 11,576.26 | 7,574.02 | -1,439.83 | 14,464,088.06 | 1,728,605.67 | 39.82753579 | -80.68588568 |
| 19,100.00 | 91.00 | 330.34 | 11,574.52 | 7,660.90 | -1,489.31 | 14,464,174.94 | 1,728,556.19 | 39.82777487 | -80.68606084 |
| 19,200.00 | 91.00 | 330.34 | 11,572.78 | 7,747.78 | -1,538.79 | 14,464,261.82 | 1,728,506.70 | 39.82801394 | -80.68623600 |
| 19,300.00 | 91.00 | 330.34 | 11,571.04 | 7,834.66 | -1,588.27 | 14,464,348.70 | 1,728,457.22 | 39.82825302 | -80.68641116 |
| 19,400.00 | 91.00 | 330.34 | 11,569.30 | 7,921.54 | -1,637.76 | 14,464,435.59 | 1,728,407.74 | 39.82849209 | -80.68658633 |
| 19,500.00 | 91.00 | 330.34 | 11,567.56 | 8,008.42 | -1,687.24 | 14,464,522.47 | 1,728,358.26 | 39.82873117 | -80.68676149 |



Planning Report - Geographic

| | | | |
|-----------|--------------------------------|------------------------------|---------------------------|
| Database: | DB_Jul2216dt_V14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Planned Survey | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 19,600.00 | 91.00 | 330.34 | 11,565.82 | 8,095.31 | -1,736.72 | 14,464,609.35 | 1,728,308.77 | 39.82897024 | -80.68693666 |
| 19,700.00 | 91.00 | 330.34 | 11,564.08 | 8,182.19 | -1,786.20 | 14,464,696.23 | 1,728,259.29 | 39.82920931 | -80.68711163 |
| 19,800.00 | 91.00 | 330.34 | 11,562.33 | 8,269.07 | -1,835.69 | 14,464,783.11 | 1,728,209.81 | 39.82944839 | -80.68728699 |
| 19,900.00 | 91.00 | 330.34 | 11,560.59 | 8,355.95 | -1,885.17 | 14,464,869.99 | 1,728,160.32 | 39.82968746 | -80.68746216 |
| 20,000.00 | 91.00 | 330.34 | 11,558.85 | 8,442.83 | -1,934.65 | 14,464,956.88 | 1,728,110.84 | 39.82992653 | -80.68763733 |
| 20,100.00 | 91.00 | 330.34 | 11,557.11 | 8,529.71 | -1,984.13 | 14,465,043.76 | 1,728,061.36 | 39.83016560 | -80.68781251 |
| 20,200.00 | 91.00 | 330.34 | 11,555.37 | 8,618.60 | -2,033.62 | 14,465,130.64 | 1,728,011.88 | 39.83040467 | -80.68798768 |
| 20,300.00 | 91.00 | 330.34 | 11,553.63 | 8,703.48 | -2,083.10 | 14,465,217.52 | 1,727,962.39 | 39.83064375 | -80.68816285 |
| 20,400.00 | 91.00 | 330.34 | 11,551.89 | 8,790.36 | -2,132.58 | 14,465,304.40 | 1,727,912.91 | 39.83088282 | -80.68833803 |
| 20,500.00 | 91.00 | 330.34 | 11,550.15 | 8,877.24 | -2,182.06 | 14,465,391.29 | 1,727,863.43 | 39.83112189 | -80.68851321 |
| 20,600.00 | 91.00 | 330.34 | 11,548.41 | 8,964.12 | -2,231.55 | 14,465,478.17 | 1,727,813.95 | 39.83136096 | -80.68868839 |
| 20,700.00 | 91.00 | 330.34 | 11,546.66 | 9,051.01 | -2,281.03 | 14,465,565.05 | 1,727,764.46 | 39.83160003 | -80.68886357 |
| 20,800.00 | 91.00 | 330.34 | 11,544.92 | 9,137.89 | -2,330.51 | 14,465,651.93 | 1,727,714.98 | 39.83183910 | -80.68903875 |
| 20,900.00 | 91.00 | 330.34 | 11,543.18 | 9,224.77 | -2,379.99 | 14,465,738.81 | 1,727,665.50 | 39.83207817 | -80.68921393 |
| 21,000.00 | 91.00 | 330.34 | 11,541.44 | 9,311.65 | -2,429.48 | 14,465,825.69 | 1,727,616.02 | 39.83231724 | -80.68938911 |
| 21,100.00 | 91.00 | 330.34 | 11,539.70 | 9,398.53 | -2,478.96 | 14,465,912.58 | 1,727,566.53 | 39.83255631 | -80.68956430 |
| 21,200.00 | 91.00 | 330.34 | 11,537.96 | 9,485.41 | -2,528.44 | 14,465,999.46 | 1,727,517.05 | 39.83279538 | -80.68973948 |
| 21,300.00 | 91.00 | 330.34 | 11,536.22 | 9,572.30 | -2,577.92 | 14,466,086.34 | 1,727,467.57 | 39.83303445 | -80.68991467 |
| 21,400.00 | 91.00 | 330.34 | 11,534.48 | 9,659.18 | -2,627.41 | 14,466,173.22 | 1,727,418.09 | 39.83327351 | -80.69008986 |
| 21,500.00 | 91.00 | 330.34 | 11,532.74 | 9,746.06 | -2,676.89 | 14,466,260.10 | 1,727,368.60 | 39.83351258 | -80.69026504 |
| 21,600.00 | 91.00 | 330.34 | 11,530.99 | 9,832.94 | -2,726.37 | 14,466,346.98 | 1,727,319.12 | 39.83375165 | -80.69044023 |
| 21,700.00 | 91.00 | 330.34 | 11,529.25 | 9,919.82 | -2,775.86 | 14,466,433.87 | 1,727,269.64 | 39.83399072 | -80.69061543 |
| 21,800.00 | 91.00 | 330.34 | 11,527.51 | 10,006.71 | -2,825.34 | 14,466,520.75 | 1,727,220.16 | 39.83422979 | -80.69079062 |
| 21,900.00 | 91.00 | 330.34 | 11,525.77 | 10,093.59 | -2,874.82 | 14,466,607.63 | 1,727,170.67 | 39.83446885 | -80.69096581 |
| 22,000.00 | 91.00 | 330.34 | 11,524.03 | 10,180.47 | -2,924.30 | 14,466,694.51 | 1,727,121.19 | 39.83470792 | -80.69114101 |
| 22,001.71 | 91.00 | 330.34 | 11,524.00 | 10,181.95 | -2,925.15 | 14,466,696.00 | 1,727,120.35 | 39.83471200 | -80.69114400 |

PBHL/TD 22001.71 MD/11524.00 TVD

| Design Targets | | | | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-------------|--------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| Ten High 1N-20HU BHL - hit/miss target - Shape - Point | 0.00 | 0.00 | 11,524.00 | 10,181.95 | -2,925.15 | 14,466,696.00 | 1,727,120.35 | 39.83471200 | -80.69114400 |
| Ten High 1N-20HU LP - plan misses target center by 43.63usft at 12443.66usft MD (11689.95 TVD, 1877.66 N, 1804.28 E) - Point | 0.00 | 0.00 | 11,690.00 | 1,898.49 | 1,842.61 | 14,458,412.53 | 1,731,888.11 | 39.81191722 | -80.67426796 |
| Ten High 1N-20HU LP 5 - plan hits target center - Point | 0.00 | 0.00 | 11,690.00 | 1,898.49 | 1,792.61 | 14,458,412.53 | 1,731,838.10 | 39.81191772 | -80.67444602 |

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Planning Report - Geographic

| | | | |
|------------------|--------------------------------|-------------------------------------|---------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Ten High 1N-20HU (N) |
| Company: | Tug Hill Operating LLC | TVD Reference: | GL @ 1310.00usft |
| Project: | Marshall County, West Virginia | MD Reference: | GL @ 1310.00usft |
| Site: | Ten High | North Reference: | Grid |
| Well: | Ten High 1N-20HU (N) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev3 | | |

| Plan Annotations | | | | |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
| | | +N/-S (usft) | +E/-W (usft) | |
| 1,300.00 | 1,300.00 | 0.00 | 0.00 | KOP Begin 2°/100' build |
| 1,500.00 | 1,499.84 | -8.74 | 1.81 | Begin 2°/100' turn |
| 1,603.45 | 1,603.05 | -12.78 | 5.29 | Begin 4.00° tangent |
| 3,220.69 | 3,216.34 | -92.55 | 85.06 | Begin 2°/100' drop |
| 3,420.69 | 3,416.18 | -97.48 | 90.00 | Begin vertical hold section |
| 4,504.51 | 4,500.00 | -97.48 | 90.00 | Begin 3°/100' build |
| 5,171.17 | 5,153.21 | -58.09 | 198.23 | Begin 20.00° tangent |
| 5,671.17 | 5,623.06 | 0.40 | 358.83 | Begin 3°/100' build/turn |
| 5,901.03 | 5,839.25 | 39.38 | 426.10 | Begin 20.09° tangent |
| 11,594.19 | 11,185.91 | 1,302.04 | 1,919.75 | Begin 10°/100' build/turn |
| 12,467.53 | 11,690.00 | 1,898.49 | 1,792.61 | Begin 91.00° lateral section |
| 22,001.71 | 11,524.00 | 10,181.95 | -2,925.15 | PBHL/TD 22001.71 MD/11524.00 TVD |

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WW-9
(4/16)

API Number 47 - 051 - 02021
Operator's Well No. Ten High 1N-20HU

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

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FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

Will a synthetic liner be used in the pit? Yes No If so, what ml.? AST Tanks will be used with proper control

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 985, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes - For Vertical and Horizontal Drilling

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? Barite for weight

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All drill cuttings to be disposed of in a Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP ECF1386428)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

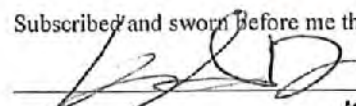
I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature _____

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

Subscribed and sworn before me this 20th day of February, 2018



Notary Public

My commission expires 8-31-21



Form WW-9

Operator's Well No. Ten High 1N-20HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.20 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

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Seed Mixtures

| Temporary | | Permanent | |
|-----------------|----------|---------------|----------|
| Seed Type | lbs/acre | Seed Type | lbs/acre |
| Annual Ryegrass | 40 | Orchard Grass | 12 |
| Spring Oats | 96 | Ladino | 3 |
| | | White Clover | 2 |

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jan Tubolan*

Comments: _____

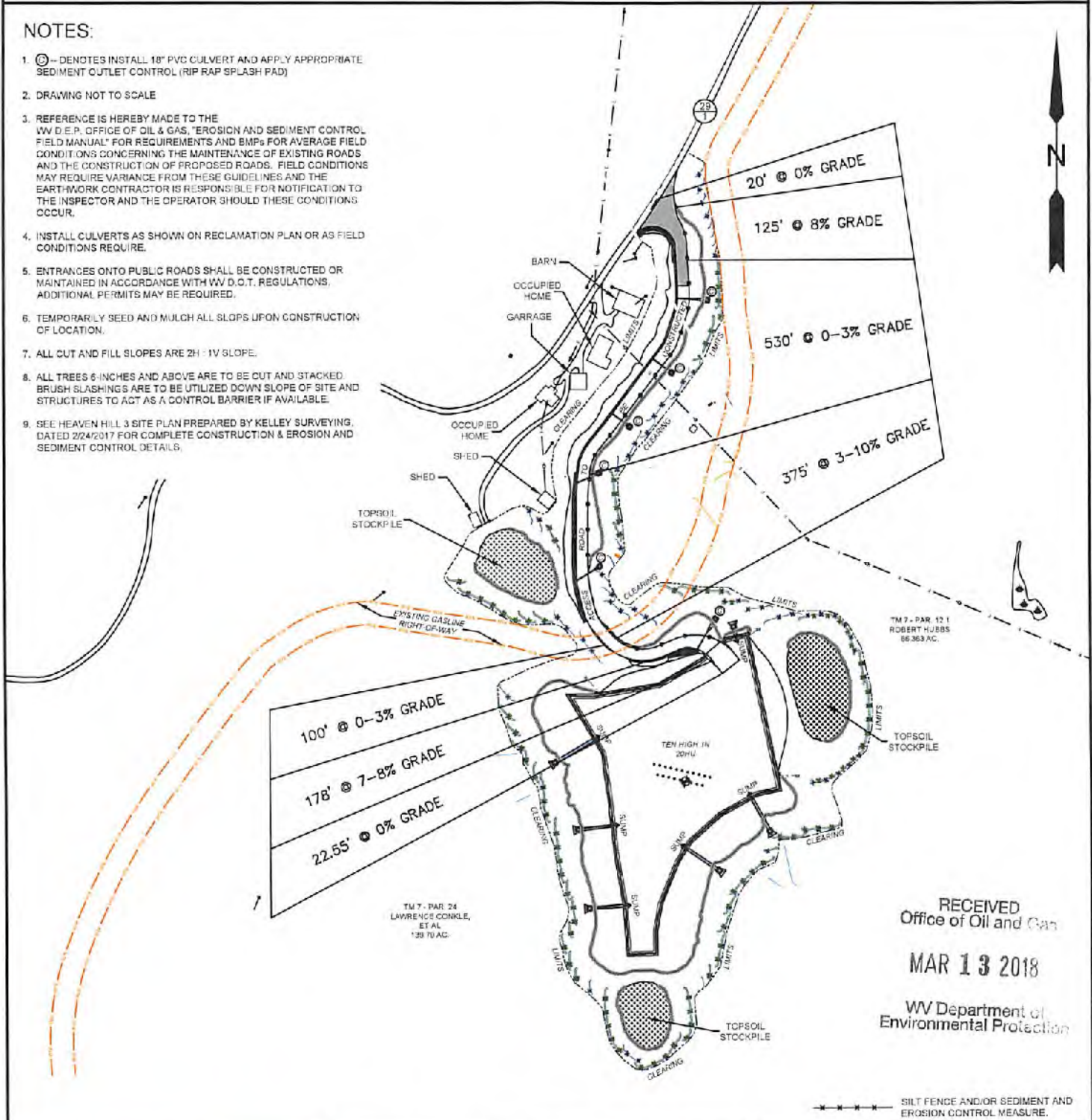
Title: *Oil & Gas Inspector* Date: *2/21/18*

Field Reviewed? Yes No

PROPOSED TEN HIGH 1N - 20HU

NOTES:

1. DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6 INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL 3 SITE PLAN PREPARED BY KELLEY SURVEYING, DATED 2/24/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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----- SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE.

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 130 • 12 Vanborn Drive • Glenville, WV 26031 • (304) 462-5634
www.slsurvey.com

| | | | |
|------------------|----------|-------------------------|-------|
| TOPO SECTION: | | OPERATOR: | |
| GLEN EASTON 7.5' | | PREPARED FOR: | |
| COUNTY | DISTRICT | TUG HILL OPERATING, LLC | |
| MARSHALL | MEADE | 380 SOUTHPOINTE BLVD | |
| | | SUITE 200 | |
| | | CANONSBURG, PA 15317 | |
| DRAWN BY | JOB NO. | DATE | SCALE |
| K.G.M. | 8655 | 01-08-18 | NONE |

TUG HILL
OPERATING

51-02021



Well Site Safety Plan

Tug Hill Operating, LLC

Well Name: Ten High 1N-20HU

Pad Location: Ten High

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,354.29

EASTING -527,318.92

Jim Nielsen

February 2018

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WW-9

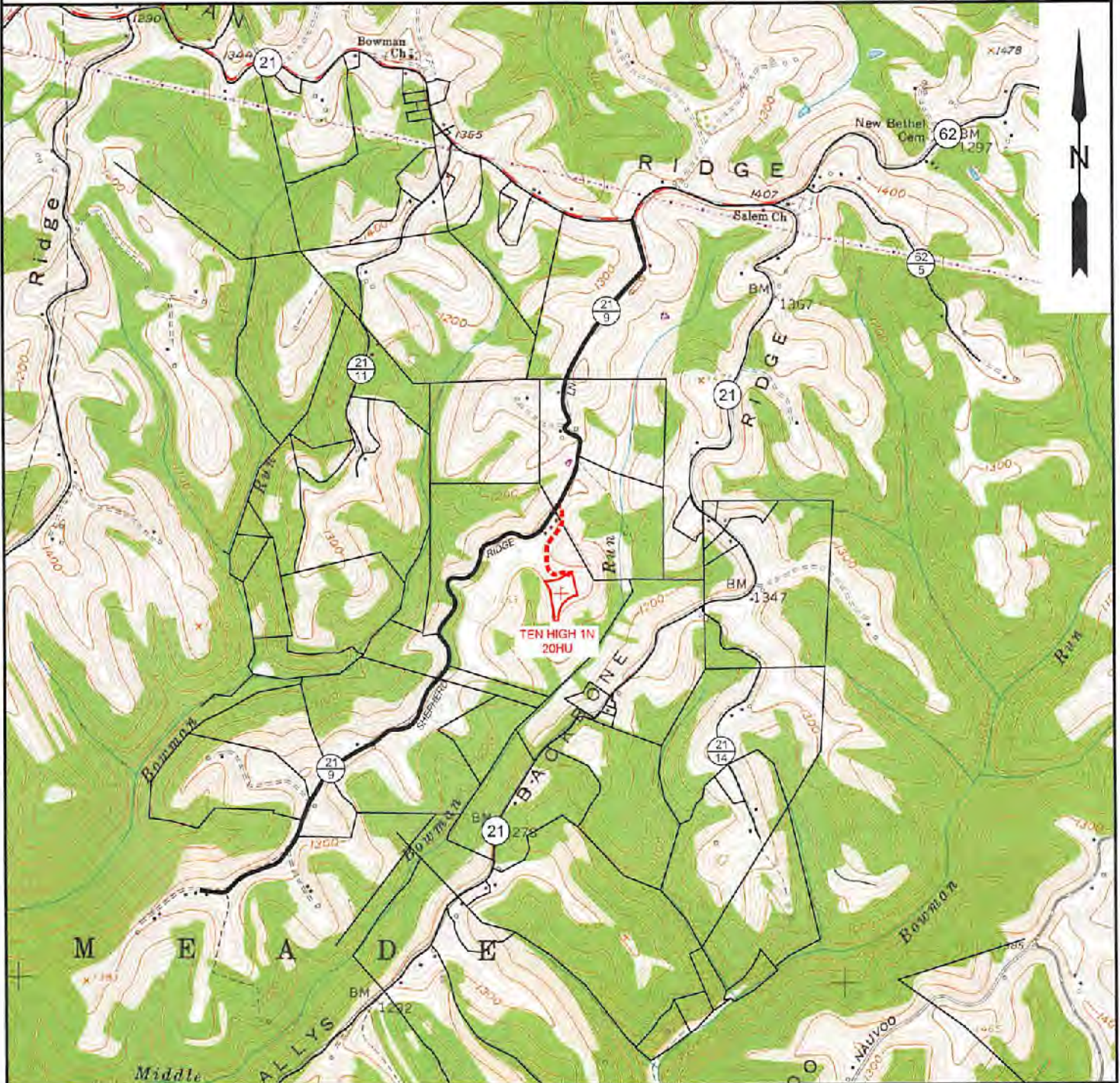
MAR 13 2018

PROPOSED

SUPPLEMENT PG. 2

WV Department of
Environmental Protection

TEN HIGH 1N - 20HU



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE DISTRICT
PROCTOR, WV

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 51°03'40" W AT 52,970' FROM TEN HIGH 1N - 20HU SURFACE LOCATION

P.O. Box 150 • 12 Vanhook Drive • Grenville, WV 26151 • (304) 462-6634
www.slsurveys.com

| | | | |
|------------------|----------|-------------------------|------------|
| TOPO SECTION: | | OPERATOR: | |
| GLEN EASTON 7.5' | | PREPARED FOR: | |
| COUNTY | DISTRICT | TUG HILL OPERATING, LLC | |
| MARSHALL | MEADE | 380 SOUTHPOINTE BLVD | |
| DRAWN BY | | DATE | SCALE |
| K.G.M. | | 01-08-18 | 1" = 2000' |

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

| Lease Name or Number | Grantor, Lessor, etc. | Grantee, Lessee, etc. | Royalty | Book/Page |
|----------------------|-----------------------|-----------------------|---------|-----------|
|----------------------|-----------------------|-----------------------|---------|-----------|

*See attached list

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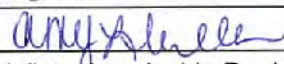
WV Department of
Environmental Protection

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Miller 
 Its: Permitting Specialist - Appalachia Region

510202

| Lease ID | Tag | Parcel | Grantor, Lessor, etc | Grantee, Lessee, etc. | Royalty | Deed Book/Page | Assignment | Assignment | Assignment | Assignment | Assignment |
|-----------------|-----|----------|----------------------------------------------------------|-----------------------|---------|----------------|------------|------------|------------|------------|-----------------------------|
| 10*15662 | A | 9-7-24 | LARRY LEE CONKLE | CHEVRON U.S.A. INC. | 1/8+ | 863 354 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 36/148 |
| 10*15663 | A | 9-7-24 | ROY A CONKLE SR AND LORIE A CONKLE | CHEVRON USA INC | 1/8+ | 863 311 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 36/148 |
| 10*15664 | A | 9-7-24 | THERESA ANNE HUGHES | CHEVRON USA INC | 1/8+ | 863 343 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 36/148 |
| 10*15666 | A | 9-7-24 | BRENDA J WHETZEL | CHEVRON USA INC | 1/8+ | 863 635 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 36/148 |
| 10*47051.223.12 | B | 9-7-25.2 | ALICE GORBY MARTIN | TH EXPLORATION LLC | 1/8+ | 908 52 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.13 | B | 9-7-25.2 | JAMES A GORBY | TH EXPLORATION LLC | 1/8+ | 908 42 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.9 | B | 9-7-25.2 | LINDA DELBERT | TH EXPLORATION LLC | 1/8+ | 908 32 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.303.1 | B | 9-7-25.2 | THOMAS R WHITFIELD | TH EXPLORATION LLC | 1/8+ | 890 401 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.303.2 | B | 9-7-25.2 | KIMBERLY A WHITFIELD | TH EXPLORATION LLC | 1/8+ | 890 403 | N/A | N/A | N/A | N/A | N/A |
| 10*15481 | B | 9-7-25.2 | DEAN P RIGBY AND SUSAN RIGBY | TH EXPLORATION LLC | 1/8+ | 908 197 | N/A | N/A | N/A | N/A | N/A |
| 10*15482 | B | 9-7-25.2 | SUSAN NELSON | TH EXPLORATION LLC | 1/8+ | 908 203 | N/A | N/A | N/A | N/A | N/A |
| 10*15686 | B | 9-7-25.2 | JOHN OMER BOLTZ | TH EXPLORATION LLC | 1/8+ | 908 160 | N/A | N/A | N/A | N/A | N/A |
| 10*15750 | B | 9-7-25.2 | SANDRA K TRULL | TH EXPLORATION LLC | 1/8+ | 908 229 | N/A | N/A | N/A | N/A | N/A |
| 10*16058 | B | 9-7-25.2 | MATTIE RUTH JACKSON PRESCOTT | TH EXPLORATION LLC | 1/8+ | 908 231 | N/A | N/A | N/A | N/A | N/A |
| 10*16118 | B | 9-7-25.2 | RUBY RIDDLE JACKSON | TH EXPLORATION LLC | 1/8+ | 908 233 | N/A | N/A | N/A | N/A | N/A |
| 10*16297 | B | 9-7-25.2 | ROBERT A LEADBETTER AND M REBECCA LEADBETTER | TH EXPLORATION LLC | 1/8+ | 908 235 | N/A | N/A | N/A | N/A | N/A |
| 10*16298 | B | 9-7-25.2 | GEOFFREY A SHEIFER AND STEPHANIE L SCHIEFER | TH EXPLORATION LLC | 1/8+ | 908 238 | N/A | N/A | N/A | N/A | N/A |
| 10*16383 | B | 9-7-25.2 | ROBERT STEPHEN DRIGGERS | TH EXPLORATION LLC | 1/8+ | 908 224 | N/A | N/A | N/A | N/A | N/A |
| 10*16414 | B | 9-7-25.2 | MARY ELIZABETH DRIGGERS | TH EXPLORATION LLC | 1/8+ | 908 208 | N/A | N/A | N/A | N/A | N/A |
| 10*16415 | B | 9-7-25.2 | TERENCE J ANDERSON AND NANCY J ANDERSON | TH EXPLORATION LLC | 1/8+ | 908 213 | N/A | N/A | N/A | N/A | N/A |
| 10*16416 | B | 9-7-25.2 | CYNTHIA HUDSON | TH EXPLORATION LLC | 1/8+ | 908 219 | N/A | N/A | N/A | N/A | N/A |
| 10*16424 | B | 9-7-25.2 | ROBERT J RIGBY | TH EXPLORATION LLC | 1/8+ | 908 241 | N/A | N/A | N/A | N/A | N/A |
| 10*16448 | B | 9-7-25.2 | RALPH L AND JUANITA L CRIM | TH EXPLORATION LLC | 1/8+ | 908 584 | N/A | N/A | N/A | N/A | N/A |
| 10*16478 | B | 9-7-25.2 | MARION L AND EMILY CAMPBELL | TH EXPLORATION LLC | 1/8+ | 908 245 | N/A | N/A | N/A | N/A | N/A |
| 10*16514 | B | 9-7-25.2 | ALEX R CAMPBELL & JOYCE A CAMPBELL | TH EXPLORATION LLC | 1/8+ | 908 248 | N/A | N/A | N/A | N/A | N/A |
| 10*16515 | B | 9-7-25.2 | ANNA MARIE JACKSON | TH EXPLORATION LLC | 1/8+ | 908 251 | N/A | N/A | N/A | N/A | N/A |
| 10*16516 | B | 9-7-25.2 | WILSON ANDREW JACKSON | TH EXPLORATION LLC | 1/8+ | 908 253 | N/A | N/A | N/A | N/A | N/A |
| 10*16545 | B | 9-7-25.2 | ROBERT G FOUNDS AND ELLEN FOUNDS | TH EXPLORATION LLC | 1/8+ | 908 260 | N/A | N/A | N/A | N/A | N/A |
| 10*16662 | B | 9-7-25.2 | RICHARD THOMAS MIMS & VICKIE J MIMS | TH EXPLORATION LLC | 1/8+ | 908 263 | N/A | N/A | N/A | N/A | N/A |
| 10*16666 | B | 9-7-25.2 | MICHAEL P PYLE | TH EXPLORATION LLC | 1/8+ | 908 255 | N/A | N/A | N/A | N/A | N/A |
| 10*16667 | B | 9-7-25.2 | CHARLES F AND GAIL ANN PYLE | TH EXPLORATION LLC | 1/8+ | 908 266 | N/A | N/A | N/A | N/A | N/A |
| 10*16668 | B | 9-7-25.2 | JACK I AND MERRILEE ANN PYLE | TH EXPLORATION LLC | 1/8+ | 908 257 | N/A | N/A | N/A | N/A | N/A |
| 10*16669 | B | 9-7-25.2 | JOHN S AND PATRICIA S DADO | TH EXPLORATION LLC | 1/8+ | 908 269 | N/A | N/A | N/A | N/A | N/A |
| 10*16686 | B | 9-7-25.2 | CHERYLE M TRACEY | TH EXPLORATION LLC | 1/8+ | 927 475 | N/A | N/A | N/A | N/A | N/A |
| 10*16688 | B | 9-7-25.2 | SHERRYL PYLE BAIR | TH EXPLORATION LLC | 1/8+ | 927 481 | N/A | N/A | N/A | N/A | N/A |
| 10*16689 | B | 9-7-25.2 | JOHN C FOUNDS | TH EXPLORATION LLC | 1/8+ | 927 478 | N/A | N/A | N/A | N/A | N/A |
| 10*16690 | B | 9-7-25.2 | RICARDO ORTIZ | TH EXPLORATION LLC | 1/8+ | 921 352 | N/A | N/A | N/A | N/A | N/A |
| 10*16720 | B | 9-7-25.2 | DONNA ELAINE BRASKETT | TH EXPLORATION LLC | 1/8+ | 921 152 | N/A | N/A | N/A | N/A | N/A |
| 10*16738 | B | 9-7-25.2 | CHARLES A RINE AND RUTH K RINE | TH EXPLORATION LLC | 1/8+ | 908 274 | N/A | N/A | N/A | N/A | N/A |
| 10*16742 | B | 9-7-25.2 | PAUL C WILSON | TH EXPLORATION LLC | 1/8+ | 927 490 | N/A | N/A | N/A | N/A | N/A |
| 10*16747 | B | 9-7-25.2 | WILLIAM DALE BRASKETT | TH EXPLORATION LLC | 1/8+ | 921 96 | N/A | N/A | N/A | N/A | N/A |
| 10*16787 | B | 9-7-25.2 | HERBERT BRIAN AND DONNA DRU CAMPBELL | TH EXPLORATION LLC | 1/8+ | 942 451 | N/A | N/A | N/A | N/A | N/A |
| 10*16798 | B | 9-7-25.2 | PATRICK A RANKIN AND ROBIN A RANKIN | TH EXPLORATION LLC | 1/8+ | 921 364 | N/A | N/A | N/A | N/A | N/A |
| 10*16800 | B | 9-7-25.2 | JAMES KENNETH JACKSON AND JULIE JACKSON | TH EXPLORATION LLC | 1/8+ | 921 93 | N/A | N/A | N/A | N/A | N/A |
| 10*16802 | B | 9-7-25.2 | CHRISTOPHER AND TAMMY RICHARDSON | TH EXPLORATION LLC | 1/8+ | 921 495 | N/A | N/A | N/A | N/A | N/A |
| 10*16804 | B | 9-7-25.2 | WILLIAM N AND SHERRY D TAYLOR | TH EXPLORATION LLC | 1/8+ | 921 510 | N/A | N/A | N/A | N/A | N/A |
| 10*16827 | B | 9-7-25.2 | DWIGHT D & MELODY G ANDERSON | TH EXPLORATION LLC | 1/8+ | 912 420 | N/A | N/A | N/A | N/A | N/A |
| 10*16806 | B | 9-7-25.2 | VIRGINIA WHITMAN TRUST DTD 7-25-1984 JON WHITMAN TRUSTEE | TH EXPLORATION LLC | 1/8+ | 921 528 | N/A | N/A | N/A | N/A | N/A |
| 10*16807 | B | 9-7-25.2 | DAVID TULLER AND SUSAN STORTS TULLER | TH EXPLORATION LLC | 1/8+ | 921 513 | N/A | N/A | N/A | N/A | N/A |
| 10*16808 | B | 9-7-25.2 | MICHAEL L ORTIZ | TH EXPLORATION LLC | 1/8+ | 921 349 | N/A | N/A | N/A | N/A | N/A |
| 10*16815 | B | 9-7-25.2 | HAROLD W PYLE | TH EXPLORATION LLC | 1/8+ | 921 357 | N/A | N/A | N/A | N/A | N/A |
| 10*16819 | B | 9-7-25.2 | TERESA ORTIZ BIGGS | TH EXPLORATION LLC | 1/8+ | 921 147 | N/A | N/A | N/A | N/A | N/A |
| 10*16821 | B | 9-7-25.2 | SHEILA BRASKETT WEICHEY | TH EXPLORATION LLC | 1/8+ | 921 516 | N/A | N/A | N/A | N/A | N/A |
| 10*16836 | B | 9-7-25.2 | RICK A AND LENORE A STORTS | TH EXPLORATION LLC | 1/8+ | 921 507 | N/A | N/A | N/A | N/A | N/A |
| 10*16837 | B | 9-7-25.2 | TERRY L AND THELMA A POFF | TH EXPLORATION LLC | 1/8+ | 927 472 | N/A | N/A | N/A | N/A | N/A |
| 10*16838 | B | 9-7-25.2 | ROBERT G FUNARI | TH EXPLORATION LLC | 1/8+ | 821 82 | N/A | N/A | N/A | N/A | N/A |
| 10*16839 | B | 9-7-25.2 | JAMES B FOUNDS AND LYNN M MOWERY | TH EXPLORATION LLC | 1/8+ | 921 73 | N/A | N/A | N/A | N/A | N/A |

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|----------|-----|----------|--------------------------------------------------------------------|-----------------------|---------|----------------|------------|------------|------------|------------|------------|
| 10*16863 | B | 9-7-25.2 | TINA MOORE | TH EXPLORATION LLC | 1/8+ | 921 334 | N/A | N/A | N/A | N/A | N/A |
| 10*16868 | B | 9-7-25.2 | MICHAEL W STORTS AND JESSICA M STORTS | TH EXPLORATION LLC | 1/8+ | 921 504 | N/A | N/A | N/A | N/A | N/A |
| 10*16879 | B | 9-7-25.2 | MARK E AND LESLEY A STORTS | TH EXPLORATION LLC | 1/8+ | 921 501 | N/A | N/A | N/A | N/A | N/A |
| 10*16880 | B | 9-7-25.2 | BEVERLY ANN STORTS | TH EXPLORATION LLC | 1/8+ | 921 498 | N/A | N/A | N/A | N/A | N/A |
| 10*16902 | B | 9-7-25.2 | MARY BARCAW DUKE | TH EXPLORATION LLC | 1/8+ | 921 105 | N/A | N/A | N/A | N/A | N/A |
| 10*16962 | B | 9-7-25.2 | DENNIS P AND BARBARA EZELL FLORY | TH EXPLORATION LLC | 1/8+ | 921 70 | N/A | N/A | N/A | N/A | N/A |
| 10*16976 | B | 9-7-25.2 | LESTER G AND CONSTANCE B NICKOLSON | TH EXPLORATION LLC | 1/8+ | 921 343 | N/A | N/A | N/A | N/A | N/A |
| 10*16977 | B | 9-7-25.2 | JEREMY COCHENOUR | TH EXPLORATION LLC | 1/8+ | 921 102 | N/A | N/A | N/A | N/A | N/A |
| 10*16987 | B | 9-7-25.2 | LAURIE EZELL PERRY | TH EXPLORATION LLC | 1/8+ | 921 355 | N/A | N/A | N/A | N/A | N/A |
| 10*16989 | B | 9-7-25.2 | BRITTANY RICHARDSON | TH EXPLORATION LLC | 1/8+ | 916 135 | N/A | N/A | N/A | N/A | N/A |
| 10*16991 | B | 9-7-25.2 | MARVELLEN FOUNDS AND LAUREN FOUNDS | TH EXPLORATION LLC | 1/8+ | 921 79 | N/A | N/A | N/A | N/A | N/A |
| 10*16996 | B | 9-7-25.2 | THOMAS RANKIN | TH EXPLORATION LLC | 1/8+ | 917 75 | N/A | N/A | N/A | N/A | N/A |
| 10*17130 | B | 9-7-25.2 | CINDY L BARGER | TH EXPLORATION LLC | 1/8+ | 921 137 | N/A | N/A | N/A | N/A | N/A |
| 10*17155 | B | 9-7-25.2 | JESSE LEON JR AND TERESA GAIL EZELLE | TH EXPLORATION LLC | 1/8+ | 921 118 | N/A | N/A | N/A | N/A | N/A |
| 10*17156 | B | 9-7-25.2 | HENRI NELL JACKSON KENT BARNES | TH EXPLORATION LLC | 1/8+ | 921 139 | N/A | N/A | N/A | N/A | N/A |
| 10*17157 | B | 9-7-25.2 | JAMES N REEVES JR AND RITA M REEVES | TH EXPLORATION LLC | 1/8+ | 921 367 | N/A | N/A | N/A | N/A | N/A |
| 10*17198 | B | 9-7-25.2 | THOMAS G AND DIANE W BAYLESS | TH EXPLORATION LLC | 1/8+ | 921 141 | N/A | N/A | N/A | N/A | N/A |
| 10*17205 | B | 9-7-25.2 | SANDRA JEAN WILSON | TH EXPLORATION LLC | 1/8+ | 921 524 | N/A | N/A | N/A | N/A | N/A |
| 10*17208 | B | 9-7-25.2 | PATRICK S GALLAGHER AND JOYCE ANN FOUNDS | TH EXPLORATION LLC | 1/8+ | 921 86 | N/A | N/A | N/A | N/A | N/A |
| 10*17274 | B | 9-7-25.2 | DAVID H WILSON | TH EXPLORATION LLC | 1/8+ | 921 474 | N/A | N/A | N/A | N/A | N/A |
| 10*17275 | B | 9-7-25.2 | JOHN R REEVES AND MONA G REEVES | TH EXPLORATION LLC | 1/8+ | 921 373 | N/A | N/A | N/A | N/A | N/A |
| 10*17276 | B | 9-7-25.2 | BERTHA EZELL WYATT | TH EXPLORATION LLC | 1/8+ | 921 526 | N/A | N/A | N/A | N/A | N/A |
| 10*17278 | B | 9-7-25.2 | MICHAEL L EZELLE | TH EXPLORATION LLC | 1/8+ | 921 121 | N/A | N/A | N/A | N/A | N/A |
| 10*17339 | B | 9-7-25.2 | JOSEPH W FOUNDS | TH EXPLORATION LLC | 1/8+ | 921 76 | N/A | N/A | N/A | N/A | N/A |
| 10*17377 | B | 9-7-25.2 | MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE | TH EXPLORATION LLC | 1/8+ | 921 123 | N/A | N/A | N/A | N/A | N/A |
| 10*17416 | B | 9-7-25.2 | ANDREW M ORTIZ | TH EXPLORATION LLC | 1/8+ | 921 346 | N/A | N/A | N/A | N/A | N/A |
| 10*17438 | B | 9-7-25.2 | DENNIS M WILSON | TH EXPLORATION LLC | 1/8+ | 921 476 | N/A | N/A | N/A | N/A | N/A |
| 10*17440 | B | 9-7-25.2 | KENDRA WALISA | TH EXPLORATION LLC | 1/8+ | 927 484 | N/A | N/A | N/A | N/A | N/A |
| 10*17441 | B | 9-7-25.2 | RALPH J WILSON | TH EXPLORATION LLC | 1/8+ | 921 522 | N/A | N/A | N/A | N/A | N/A |
| 10*17442 | B | 9-7-25.2 | SHANE ALLEN AND MENDY JEAN ALLEN | TH EXPLORATION LLC | 1/8+ | 921 134 | N/A | N/A | N/A | N/A | N/A |
| 10*17443 | B | 9-7-25.2 | MICHELLE MORROW-BACK | TH EXPLORATION LLC | 1/8+ | 921 337 | N/A | N/A | N/A | N/A | N/A |
| 10*17444 | B | 9-7-25.2 | KELLY FOUNDS CAMPBELL | TH EXPLORATION LLC | 1/8+ | 921 99 | N/A | N/A | N/A | N/A | N/A |
| 10*17449 | B | 9-7-25.2 | PHYLLIS J BLAKE | TH EXPLORATION LLC | 1/8+ | 921 150 | N/A | N/A | N/A | N/A | N/A |
| 10*17482 | B | 9-7-25.2 | TERESA EZELLE RALYA AND DAVID L RALYA | TH EXPLORATION LLC | 1/8+ | 927 487 | N/A | N/A | N/A | N/A | N/A |
| 10*17483 | B | 9-7-25.2 | RICHARD I PYLE | TH EXPLORATION LLC | 1/8+ | 921 359 | N/A | N/A | N/A | N/A | N/A |
| 10*17484 | B | 9-7-25.2 | NELDA S JACKSON | TH EXPLORATION LLC | 1/8+ | 921 330 | N/A | N/A | N/A | N/A | N/A |
| 10*17485 | B | 9-7-25.2 | MARGIE ANN JACKSON ROBBINS GRAHAM | TH EXPLORATION LLC | 1/8+ | 921 91 | N/A | N/A | N/A | N/A | N/A |
| 10*17526 | B | 9-7-25.2 | JEFFREY L REEVES AND JODY L REEVES | TH EXPLORATION LLC | 1/8+ | 921 370 | N/A | N/A | N/A | N/A | N/A |
| 10*17527 | B | 9-7-25.2 | JAMES MICHAEL EZELL AND LUCILLE D EZELL | TH EXPLORATION LLC | 1/8+ | 921 111 | N/A | N/A | N/A | N/A | N/A |
| 10*17538 | B | 9-7-25.2 | CHERYL RANKIN-KING | TH EXPLORATION LLC | 1/8+ | 952 160 | N/A | N/A | N/A | N/A | N/A |
| 10*17552 | B | 9-7-25.2 | JOHN BEVACQUA AND PATRICIA A BEVACQUA | TH EXPLORATION LLC | 1/8+ | 921 144 | N/A | N/A | N/A | N/A | N/A |
| 10*17554 | B | 9-7-25.2 | MICHAEL T RANKIN | TH EXPLORATION LLC | 1/8+ | 921 361 | N/A | N/A | N/A | N/A | N/A |
| 10*17561 | B | 9-7-25.2 | ROGER L TYRELL AND KATHRYN L TYRELL | TH EXPLORATION LLC | 1/8+ | 921 519 | N/A | N/A | N/A | N/A | N/A |
| 10*17564 | B | 9-7-25.2 | JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON | TH EXPLORATION LLC | 1/8+ | 921 340 | N/A | N/A | N/A | N/A | N/A |
| 10*17565 | B | 9-7-25.2 | JESSE ALLEN JACKSON AND ELIZABETH D JACKSON | TH EXPLORATION LLC | 1/8+ | 921 327 | N/A | N/A | N/A | N/A | N/A |
| 10*17566 | B | 9-7-25.2 | NATHAN P ERDOSSY AND BARBARA T ERDOSSY | TH EXPLORATION LLC | 1/8+ | 921 108 | N/A | N/A | N/A | N/A | N/A |
| 10*17588 | B | 9-7-25.2 | JAMES M JACKSON | TH EXPLORATION LLC | 1/8+ | 921 325 | N/A | N/A | N/A | N/A | N/A |
| 10*17589 | B | 9-7-25.2 | MARY CHRISTINE MCKENNA | TH EXPLORATION LLC | 1/8+ | 921 332 | N/A | N/A | N/A | N/A | N/A |
| 10*17677 | B | 9-7-25.2 | GEORGE M GONTA JR | TH EXPLORATION LLC | 1/8+ | 921 89 | N/A | N/A | N/A | N/A | N/A |
| 10*17744 | B | 9-7-25.2 | SAM PRESLEY EZELL | TH EXPLORATION LLC | 1/8+ | 921 116 | N/A | N/A | N/A | N/A | N/A |
| 10*17744 | B | 9-7-25.2 | SAM PRESLEY EZELL | TH EXPLORATION LLC | 1/8+ | 921 116 | N/A | N/A | N/A | N/A | N/A |
| 10*17983 | B | 9-7-25.2 | HOLLY SUE CUTHBERT | TH EXPLORATION LLC | 1/8+ | 925 380 | N/A | N/A | N/A | N/A | N/A |
| 10*18021 | B | 9-7-25.2 | CHRISTOPHER A HANIFAN AND JACKIE F HANIFAN | TH EXPLORATION LLC | 1/8+ | 927 267 | N/A | N/A | N/A | N/A | N/A |
| 10*18022 | B | 9-7-25.2 | DALE P WARD AND CYNTHIA J WARD | TH EXPLORATION LLC | 1/8+ | 927 264 | N/A | N/A | N/A | N/A | N/A |
| 10*19524 | B | 9-7-25.2 | THE ESTATE OF AGNES IRENE EZELL CLARK BY DAVID M EDWARDS, EXECUTOR | TH EXPLORATION LLC | 1/8+ | 942 633 | N/A | N/A | N/A | N/A | N/A |
| 10*19692 | B | 9-7-25.2 | KENDRA WALISA | TH EXPLORATION, LLC | 1/8+ | 924 484 | N/A | N/A | N/A | N/A | N/A |

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| 10*19693 | B | 9-7-25.2 | MARIO R FUNARI AIF ROBERT G FUNARI | TH EXPLORATION LLC | 1/8+ | 936 145 | N/A | N/A | N/A | N/A | N/A |
| 10*19695 | B | 9-7-25.2 | VIRGINIA P FOUNDS KASSERMAN ET | TH EXPLORATION, LLC | 1/8+ | 944 333 | N/A | N/A | N/A | N/A | N/A |
| 10*19939 | B | 9-7-25.2 | ROBERT J MILLS & SHERRA SUE MILLS | TH EXPLORATION LLC | 1/8+ | 949 212 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.15 | B | 9-7-25.2 | LARRY D TAUNT AND NANCY L TAUNT | TH EXPLORATION LLC | 1/8+ | 908 14 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.20 | B | 9-7-25.2 | BARBARA A BUZZARD | TH EXPLORATION LLC | 1/8+ | 908 24 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.21 | B | 9-7-25.2 | GARY T WARD AND SHARON D WARD | TH EXPLORATION LLC | 1/8+ | 908 19 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.24 | B | 9-7-25.2 | JO DEE K DAVIS | TH EXPLORATION LLC | 1/8+ | 908 136 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.25 | B | 9-7-25.2 | JOANNE WELCH | TH EXPLORATION LLC | 1/8+ | 908 141 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.26 | B | 9-7-25.2 | WENDY L SMARKEL | TH EXPLORATION LLC | 1/8+ | 908 69 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.27 | B | 9-7-25.2 | TIMI J HOBBS | TH EXPLORATION LLC | 1/8+ | 908 277 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.29 | B | 9-7-25.2 | PATSY JO RAJU | TH EXPLORATION LLC | 1/8+ | 908 155 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.30 | B | 9-7-25.2 | LAURIE DRIGGERS MANDERSON | TH EXPLORATION LLC | 1/8+ | 908 165 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.33 | B | 9-7-25.2 | NANCY CIAFFAGLIONE HOUSLEY | TH EXPLORATION LLC | 1/8+ | 908 187 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.35 | B | 9-7-25.2 | DEBRA L CIAFFAGLIONE | TH EXPLORATION LLC | 1/8+ | 908 192 | N/A | N/A | N/A | N/A | N/A |
| 10*47051.223.6 | B | 9-7-25.2 | JOSHUA RINE AND REBECCA RINE | TH EXPLORATION LLC | 1/8+ | 907 634 | N/A | N/A | N/A | N/A | N/A |
| 10*15501 | C | 9-7-12.1 | RONALD AND EDNA MOORE | TRIENERGY INC | 1/8+ | 661 449 | TriEnergy to AB Resources: 20/252 | AB Resources to Chevron: 756/397 | Chevron to Tug Hill: 36/148 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*47051.094.0 | D | 9-7-11 | MARK H FOX | TH EXPLORATION LLC | 1/8+ | 864 163 | N/A | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 40/127 |
| 10*19117 | D | 9-7-11 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | TH EXPLORATION LLC | 1/8+ | 864 163 | N/A | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 40/127 |
| | D | 9-7-11 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | TH EXPLORATION LLC | 1/8+ | 864 163 | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*19143 | E | 9-7-28 | VICTOR CAMERON CLAIRE CAMERON | CHEVRON USA INC | 1/8+ | 872 171 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 40/127 |
| 10*19565 | F | 9-7-11.1 | WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS | TH EXPLORATION LLC | 1/8+ | 947 566 | N/A | N/A | N/A | N/A | N/A |
| 10*19135 | G | 9-7-29.1 | CAROL J ANDERSON WILLIAM ROBERT ANDERSON | CHEVRON USA INC | 1/8+ | 772 226 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| 10*19135 | H | 9-7-27 | CAROL J ANDERSON WILLIAM ROBERT ANDERSON | CHEVRON USA INC | 1/8+ | 772 226 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | I | 9-7-8 | HENDERSON ROBERT ET AL | AB RESOURCES LLC | 1/8+ | 697 215 | N/A | AB Resources to NPAR: 25/484 | NPAR to Chevron: 756/332 | AB Resources to Chevron: 756/397 | Chevron to Tug Hill: 960/409 |
| | I | 9-7-8 | SALEM CHURCH OF CHRIST OF GLEN EASTON | CHEVRON USA INC | 1/8+ | 867 558 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | I | 9-7-8 | HILLVIEW TERRACE CHURCH OF CHRIST | CHEVRON USA INC | 1/8+ | 880 400 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| 10*19031 | J | 9-7-7 | ROBERT G HUBBS SCARLETT E OTTE HUBBS | CHIEF EXPLORATION & DEVELOPMENT | 1/8+ | 677 521 | N/A | N/A | Chief Expl. to Chevron: 25/1 | Chevron to Tug Hill: 36/148 | Chevron to Tug Hill: 960/409 |
| 10*47051.075.0 | K | 9-5-14 | DAVID L HOLMES AND TERRI L HOLMES | TH EXPLORATION LLC | 1/8+ | 869 204 | N/A | N/A | N/A | N/A | N/A |
| 10*19118 | K | 9-5-14 | DAVID L HOLMES AND TERRI L HOLMES | TH EXPLORATION LLC | 1/8+ | 869 204 | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*19118 | L | 9-5-14.2 | DAVID L HOLMES AND TERRI L HOLMES | TH EXPLORATION LLC | 1/8+ | 869 204 | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| | M | 9-5-12 | WHETZEL LARRY J JR | TH EXPLORATION LLC | 1/8+ | 869 216 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | WHETZEL LARRY J JR | TH EXPLORATION LLC | 1/8+ | 869 216 | N/A | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | BONAR GRACE LAURA | CHEVRON USA INC | 1/8+ | 865 198 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | HADLEY BARBARA LOIS | CHEVRON USA INC | 1/8+ | 868 21 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | ORTOLL AMBER A | CHEVRON USA INC | 1/8+ | 871 391 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | BONAR ROBERT GLENN | CHEVRON USA INC | 1/8+ | 868 92 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | SCHILLING JAMES MCPHERSON | CHEVRON USA INC | 1/8+ | 868 202 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | FAUST LESTER D | CHEVRON USA INC | 1/8+ | 870 560 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | BOGATKO RICHARD C | CHEVRON USA INC | 1/8+ | 870 557 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | BRUNNER WILL A JR ET UX | CHEVRON USA INC | 1/8+ | 888 30 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | FAUST MARJORIE JARETTA | CHEVRON USA INC | 1/8+ | 888 10 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | DAY FRANK B | CHEVRON USA INC | 1/8+ | 871 583 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | MCWHORTER IDEN SCOTT | CHEVRON USA INC | 1/8+ | 890 475 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | MITCHELL LOTA JO ET VIR | CHEVRON USA INC | 1/8+ | 894 395 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | BONAR DAVID L | CHEVRON USA INC | 1/8+ | 890 475 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | SALO HARRY ET UX - SFX | CHEVRON USA INC | 1/8+ | 894 395 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | ARMIGER STEVEN ALAN - SFX | CHEVRON USA INC | 1/8+ | 891 69 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | FAIRBROTHER KATHERINE ANN LUONGO - SFX | CHEVRON USA INC | 1/8+ | 901 38 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | DURINSKY JOSEPH - SFX | CHEVRON USA INC | 1/8+ | 893 244 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | KACHELE ROBIN - SFX | CHEVRON USA INC | 1/8+ | 893 180 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | SHIREY KATHLEEN - SFX | CHEVRON USA INC | 1/8+ | 901 134 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | EVANS SHARON LOUISE - SFX | CHEVRON USA INC | 1/8+ | 915 597 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | SCHMITT ALBERT JOHN - SFX | CHEVRON USA INC | 1/8+ | 899 484 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | MASSARO ANTHONY - SFX | CHEVRON USA INC | 1/8+ | 899 452 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | FERRANDINO MARLENE R - SFX | CHEVRON USA INC | 1/8+ | 899 461 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | PAPPA PHILIP J - SFX | CHEVRON USA INC | 1/8+ | 899 458 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |

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|----------|---------|----------------------------------------|-------------------------------------------------------------------------|-------------------------|---------|-----------------------------------|-----------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|------------------------------|
| | N | 9-5-11.2 | FELDMAN BARBARA - SFX | CHEVRON USA INC | 1/8+ | 899 455 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | DODARO DENISE R - SFX | CHEVRON USA INC | 1/8+ | 900 49 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | MAZZOLA LOUISE M - SFX | CHEVRON USA INC | 1/8+ | 901 431 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | PAPPA VICTORIA C - SFX | CHEVRON USA INC | 1/8+ | 901 416 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | PAPPAS JAYME - SFX | CHEVRON USA INC | 1/8+ | 905 119 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | PAPPAS ROBYN - SFX | CHEVRON USA INC | 1/8+ | 905 116 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | N | 9-5-11.2 | IOVACCHINI ADREANNA - SFX | CHEVRON USA INC | 1/8+ | 943 589 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | O | 9-5-13 | JORDAN GEORGIA | TRIENERGY HOLDINGS LLC | 1/8+ | 687 616 | N/A | N/A | TriEnergy to NPAR: 23/74 | NPAR to Chevron: 756/332 | Chevron to Tug Hill: 960/409 |
| | P | 9-5-14.1 | WEST SAVANNAH N ET VIR | TH EXPLORATION LLC | 1/8+ | 876 98 | N/A | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 960/409 |
| 10*19118 | Q | 9-5-14.5 | DAVID L HOLMES AND TERRI L HOLMES | TH EXPLORATION LLC | 1/8+ | 869 204 | N/A | N/A | Tug Hill to Chevron: 36/168 | Chevron to Tug Hill: 960/409 | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | WHITE FREDDIE ET UX | TRIENERGY INC | 1/8+ | 655 555 | N/A | N/A | TriEnergy to TriEnergy Hold: 21/148 | TriEnergy Hold, et al to Chevron: 28/356 | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | BONAR GRACE LAURA | CHEVRON USA INC | 1/8+ | 865 198 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | HADLEY BARBARA LOIS | CHEVRON USA INC | 1/8+ | 868 21 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | ORTOLL AMBER A | CHEVRON USA INC | 1/8+ | 871 391 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | BONAR ROBERT GLENN | CHEVRON USA INC | 1/8+ | 868 92 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | SCHILLING JAMES MCPHERSON | CHEVRON USA INC | 1/8+ | 868 202 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | FAUST LESTER D | CHEVRON USA INC | 1/8+ | 870 560 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | BOGATKO RICHARD C | CHEVRON USA INC | 1/8+ | 870 557 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | BRUNNER WILL A JR ET UX | CHEVRON USA INC | 1/8+ | 888 30 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | FAUST MARJORIE JARETTA | CHEVRON USA INC | 1/8+ | 888 10 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | DAY FRANK B | CHEVRON USA INC | 1/8+ | 871 583 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | MCWHORTER IDEN SCOTT | CHEVRON USA INC | 1/8+ | 890 475 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | MITCHELL LOTA JO ET VIR | CHEVRON USA INC | 1/8+ | 894 395 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | BONAR DAVID L | CHEVRON USA INC | 1/8+ | 890 475 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | SALO HARRY ET UX - SFX | CHEVRON USA INC | 1/8+ | 894 395 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | ARMIGER STEVEN ALAN - SFX | CHEVRON USA INC | 1/8+ | 891 69 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | FAIRBROTHER KATHERINE ANN LUONGO - SFX | CHEVRON USA INC | 1/8+ | 901 38 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | DURINSKY JOSEPH - SFX | CHEVRON USA INC | 1/8+ | 893 244 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | KACHELE ROBIN - SFX | CHEVRON USA INC | 1/8+ | 893 180 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | SHIREY KATHLEEN - SFX | CHEVRON USA INC | 1/8+ | 901 134 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | EVANS SHARON LOUISE - SFX | CHEVRON USA INC | 1/8+ | 915 597 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | SCHMITT ALBERT JOHN - SFX | CHEVRON USA INC | 1/8+ | 899 484 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | MASSARO ANTHONY - SFX | CHEVRON USA INC | 1/8+ | 899 452 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | FERRANDINO MARLENE R - SFX | CHEVRON USA INC | 1/8+ | 899 461 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | PAPPA PHILIP J - SFX | CHEVRON USA INC | 1/8+ | 899 458 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | FELDMAN BARBARA - SFX | CHEVRON USA INC | 1/8+ | 899 455 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | DODARO DENISE R - SFX | CHEVRON USA INC | 1/8+ | 900 49 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | MAZZOLA LOUISE M - SFX | CHEVRON USA INC | 1/8+ | 901 431 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | PAPPA VICTORIA C - SFX | CHEVRON USA INC | 1/8+ | 901 416 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | PAPPAS JAYME - SFX | CHEVRON USA INC | 1/8+ | 905 119 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | PAPPAS ROBYN - SFX | CHEVRON USA INC | 1/8+ | 905 116 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | R | 9-5-11 | IOVACCHINI ADREANNA - SFX | CHEVRON USA INC | 1/8+ | 943 589 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| 10*19005 | S | 9-5-14.3 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | TRIENERGY HOLDINGS, LLC | 1/8+ | 687 598 | N/A | TriEnergy Holdings to NPAR: 23/74 | NPAR to Chevron: 756/332 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*15506 | T | 9-5-14.4 | BETTY R. OTT | TRIENERGY HOLDINGS LLC | 1/8+ | 687 604 | TriEnergy Holdings to NPAR: 23/74 | NPAR to Chevron: 756/332 | Chevron to Tug Hill: 36/148 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*19005 | U | 9-5-15 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | TRIENERGY HOLDINGS, LLC | 1/8+ | 687 598 | N/A | TriEnergy Holdings to NPAR: 23/74 | NPAR to Chevron: 756/332 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| 10*19206 | V | 9-5-8 | SCOTT A HUSTUTLER | TRIENERGY HOLDINGS, LLC | 1/8+ | 724 208 | TriEnergy Holdings to NPAR: 25/463 | NPAR to Chevron: 26/269 | NPAR to Chevron: 756/307 | Chevron to Tug Hill: 40/127 | Chevron to Tug Hill: 960/409 |
| | W | 9-5-8.2 | WHETZEL ROBERT L ET UX | CHEVRON USA INC | 1/8+ | 772 523 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | X | 9-5-8.1 | MCKINNEY ISAAC L ET UX | TRIENERGY HOLDINGS LLC | 1/8+ | 701 472 | N/A | N/A | TriEnergy to NPAR: 24/180 | NPAR to Chevron: 756/332 | Chevron to Tug Hill: 960/409 |
| | Y | NOT ASSESSED | YEAGER ADDITION TO BOWMAN RIDGE CEMETERY FROM PLAT OF SURVEY DB 509/374 | CHEVRON USA INC | 1/8+ | 867 110 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| | Z | 9-5-7 | BOWMAN UNITED METHODIST CHURCH | CHEVRON USA INC | 1/8+ | 867 110 | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| AA | 9-5-6.1 | DAKAN JOSEPH D | CHESAPEAKE APPALACHIA LLC | 1/8+ | 694 71 | N/A | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |
| AA | 9-5-6.1 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | CHESAPEAKE APPALACHIA LLC | 1/8+ | 695 175 | N/A | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |
| BB | 9-2-12 | CRAWFORD HARRY ET AL | TRIENERGY INC | 1/8+ | 661 156 | TriEnergy to AB Resources: 20/252 | TriEnergy to TriEnergy Holdings: 21/148 | AB Resources to Chevron: 756/397 | TriEnergy Holdings to Chevron: 28/356 | N/A | Chevron to Tug Hill: 960/409 |
| CC | 9-5-6 | NANCY L. SNYDER | CHEVRON USA INC | 1/8+ | 865 191 | N/A | N/A | N/A | N/A | N/A | Chevron to Tug Hill: 960/409 |
| CC | 9-5-6 | DAKAN JOSEPH D - SFX | CHESAPEAKE APPALACHIA LLC | 1/8+ | 694 71 | N/A | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |
| CC | 9-5-6 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | CHESAPEAKE APPALACHIA LLC | 1/8+ | 695 175 | N/A | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |

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| Lease ID | Tag | Parcel | Grantor, Lessor, etc | Grantee, Lessee, etc. | Royalty | Deed Book/Page | | Assignment | Assignment | Assignment | Assignment | Assignment |
|----------|-----|----------|----------------------------------------|---------------------------|---------|----------------|-----|-----------------------------------|-----------------------------------------|----------------------------------|---------------------------------------|------------------------------|
| | DD | 9-2-12.2 | CRAWFORD HARRY ET AL | TRIENERGY INC | 1/8+ | 661 | 156 | TriEnergy to AB Resources: 20/252 | TriEnergy to TriEnergy Holdings: 21/148 | AB Resources to Chevron: 756/397 | TriEnergy Holdings to Chevron: 28/356 | Chevron to Tug Hill: 960/409 |
| | EE | 9-5-6.9 | DAKAN JOSEPH D - SFX | CHESAPEAKE APPALACHIA LLC | 1/8+ | 694 | 71 | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |
| | EE | 9-5-6.9 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | CHESAPEAKE APPALACHIA LLC | 1/8+ | 695 | 175 | N/A | N/A | N/A | Chesapeake to Chevron: 30/461 | Chevron to Tug Hill: 960/409 |
| | FF | 9-2-12.1 | CRAWFORD HARRY ET AL | TRIENERGY INC | 1/8+ | 661 | 156 | TriEnergy to AB Resources: 20/252 | TriEnergy to TriEnergy Holdings: 21/148 | AB Resources to Chevron: 756/397 | TriEnergy Holdings to Chevron: 28/356 | Chevron to Tug Hill: 960/409 |

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6,874' B.H.

3,986 T.H.

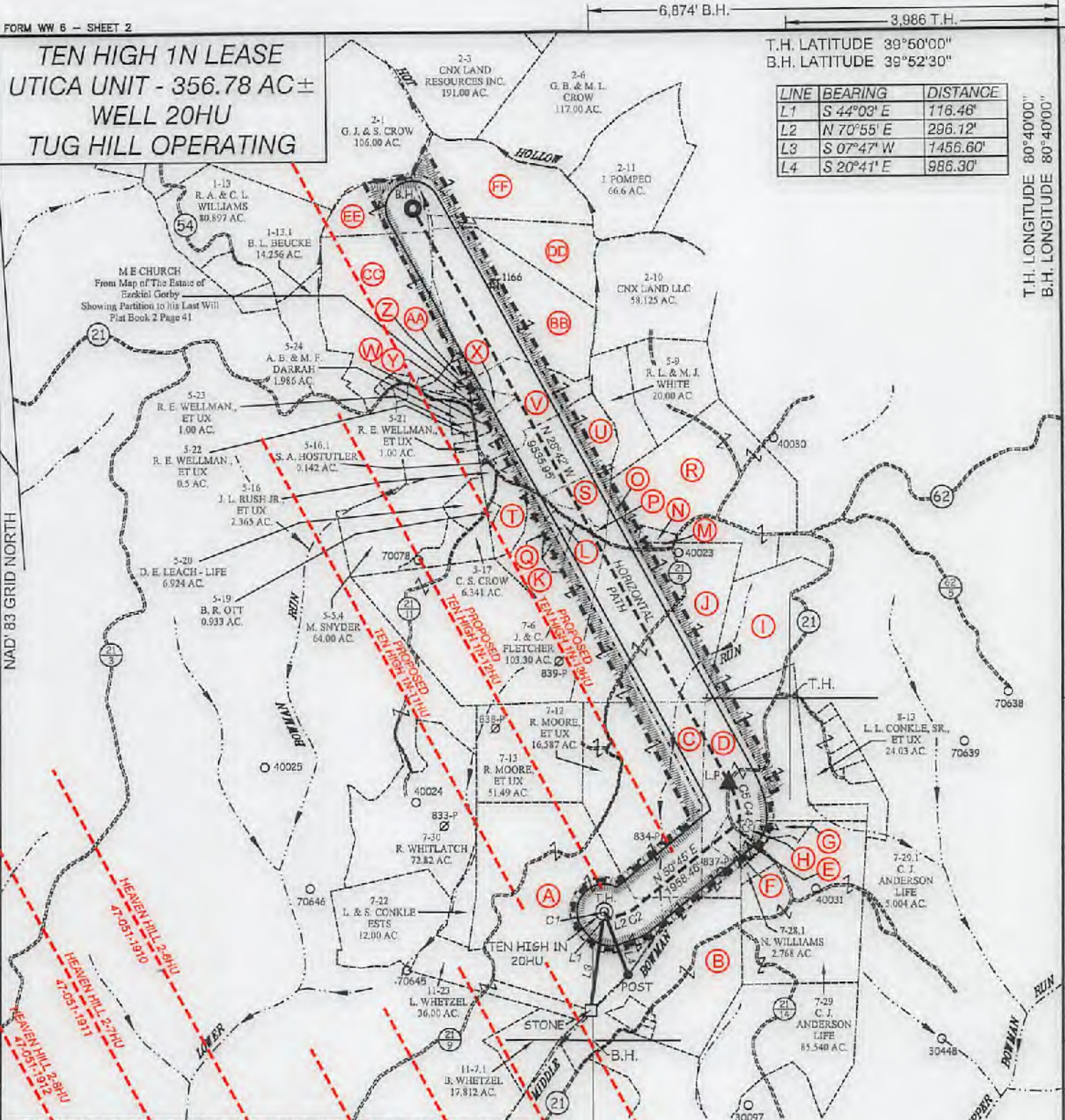
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°52'30"

**TEN HIGH 1N LEASE
UTICA UNIT - 356.78 AC ±
WELL 20HU
TUG HILL OPERATING**

| LINE | BEARING | DISTANCE |
|------|------------|----------|
| L1 | S 44°08' E | 116.46' |
| L2 | N 70°55' E | 296.12' |
| L3 | S 07°47' W | 1456.60' |
| L4 | S 20°41' E | 986.30' |

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

NAD'83 GRID NORTH



| CURVE | ARC LENGTH | RADIUS | CHORD BEARING | CHORD LENGTH |
|-------|------------|----------|---------------|--------------|
| C1 | 17.28' | 27.68' | S 25°53' E | 17.00' |
| C2 | 68.27' | 219.64' | N 59°33' E | 67.99' |
| C3 | 71.09' | 110.60' | N 26°49' E | 69.88' |
| C4 | 216.64' | 499.69' | N 04°55' W | 214.95' |
| C5 | 347.77' | 1484.78' | N 22°20' W | 346.97' |

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 452-5634
www.slsurveys.com

P.S. 677

Gregory A. Smith

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

| | | |
|----------------------|-------------------|--------------------|
| NAD'83 S.P.C.(FT) | N. 476,129.43 | E. 1,636,765.22 |
| NAD'83 GEO. | LAT-(N) 39.806722 | LONG-(W) 80.680854 |
| NAD'83 UTM (M) | N. 4,406,354.29 | E. 627,318.02 |
| LANDING POINT | | |
| NAD'83 S.P.C.(FT) | N. 479,999.3 | E. 1,638,589.9 |
| NAD'83 GEO. | LAT-(N) 39.811918 | LONG-(W) 80.674446 |
| NAD'83 UTM (M) | N. 4,406,933.0 | E. 627,865.3 |
| BOTTOM HOLE | | |
| NAD'83 S.P.C.(FT) | N. 488,962.3 | E. 1,634,009.7 |
| NAD'83 GEO. | LAT-(N) 39.834712 | LONG-(W) 80.691144 |
| NAD'83 UTM (M) | N. 4,409,467.8 | E. 626,427.3 |



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

| | |
|------------------------------------|--|
| UNIT BOUNDARY | |
| LEASED TRACTS INSIDE UNIT BOUNDARY | |
| SURFACE LINE | |
| DEED WELL LATERAL WITHIN 300' | |
| WELL LATERAL | |
| 400' OFFSET LINE | |
| 500' OFFSET LINE | |
| TIE LINE | |
| CREEK | |
| ROAD | |
| COUNTY ROUTE | |
| PROPOSED WELL | |
| EXISTING WELL | |
| PERMITTED WELL | |
| SURFACE OWNER (SEE TABLE-SHEET 1) | |
| LEASE # (SEE ADDITIONAL SHEETS) | |

SCALE 1" = 2000' FILE NO. 8655P20HUR2.dwg
DATE JANUARY 19 20 18
REVISED FEBRUARY 20 & MARCH 9 20 18
OPERATORS WELL NO. TEN HIGH 1N-20HU
API WELL NO. 47-051-02021-MA
NO. STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

| | |
|---------------------------------------------------------------------|----------------------------------------------------|
| WELL OPERATOR TUG HILL OPERATING, LLC | DESIGNATED AGENT DIANNA STAMPER |
| ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 600 FORT WORTH, TX 76107 | ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313 |

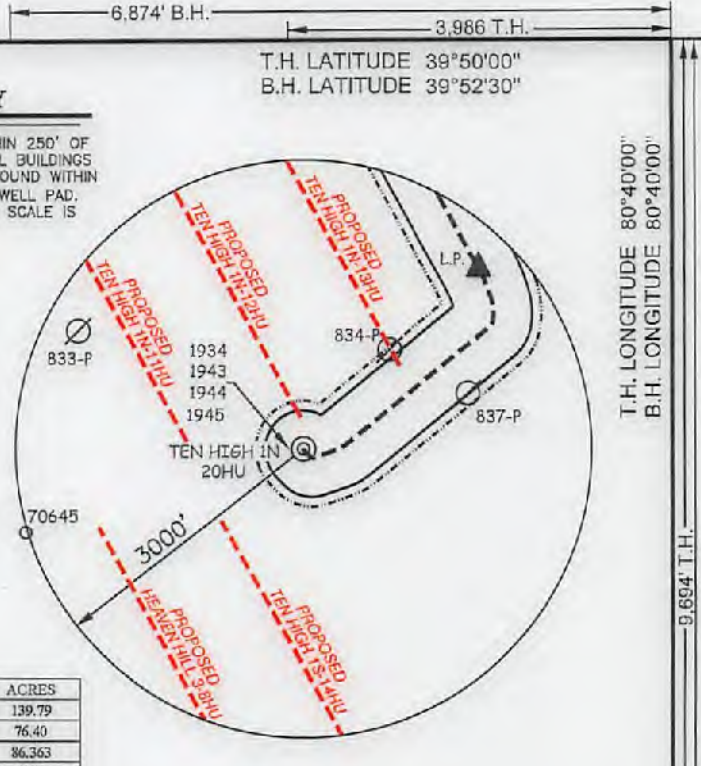
COUNTY NAME
PERMIT

**TEN HIGH 1N LEASE
UTICA UNIT - 356.78 AC±
WELL 20HU
TUG HILL OPERATING**

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°52'30"



T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

9,694' T.H.

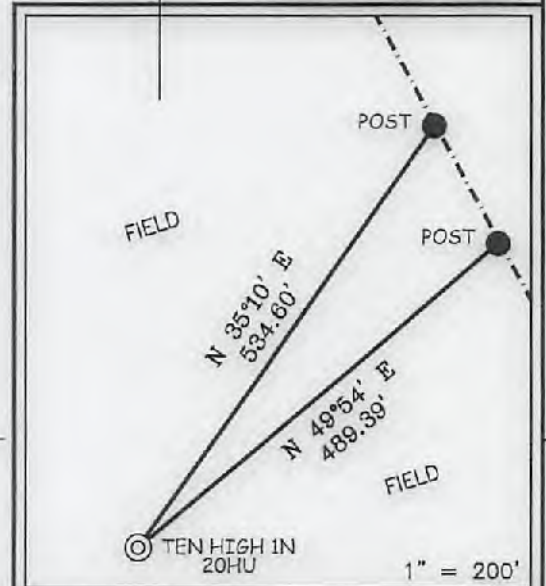
14,676' B.H.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

| | | |
|----------------------|-------------------|--------------------|
| NAD83 S.P.C.(FT) | N. 478,129.43 | E. 1,636,765.22 |
| NAD83 GEO. | LAT-(N) 39.806722 | LONG-(W) 80.680854 |
| NAD83 UTM (M) | N. 4,406,354.29 | E. 527,318.92 |
| LANDING POINT | | |
| NAD83 S.P.C.(FT) | N. 479,998.3 | E. 1,638,589.9 |
| NAD83 GEO. | LAT-(N) 39.811918 | LONG-(W) 80.674446 |
| NAD83 UTM (M) | N. 4,406,933.0 | E. 527,895.3 |
| BOTTOM HOLE | | |
| NAD83 S.P.C.(FT) | N. 488,362.3 | E. 1,634,009.7 |
| NAD83 GEO. | LAT-(N) 39.834712 | LONG-(W) 80.691144 |
| NAD83 UTM (M) | N. 4,409,457.8 | E. 526,427.3 |

| TAG | SURFACE OWNER | PARCEL | ACRES |
|-----|-------------------------------------------------------------------------|----------|---------------------------|
| A | LAWRENCE & SHIRLEY CONKLE ESTS | 9-7-24 | 139.79 |
| B | THOMAS R. & KIMBERLY WHITFIELD | 9-7-25.2 | 76.40 |
| C | ROBERT G. HUBBS & SCARLETTE E. OTTE | 9-7-12.1 | 86.363 |
| D | MARK H. FOX | 9-7-11 | 75.37 |
| E | VICTOR & CLAIRE CAMERON | 9-7-28 | 1.983 |
| F | W.V. DEPT. OF HIGHWAYS | 9-7-11.1 | 3.63 |
| G | CAROL J. ANDERSON - LIFE | 9-7-29.1 | 5.004 |
| H | CAROL J. ANDERSON - LIFE | 9-7-27 | 1.006 |
| I | ROBERT HENDERSON, ET AL | 9-7-8 | 48.00 |
| J | ROBERT GLENN HUBBS, ET AL | 9-7-7 | 108.61 |
| K | DAVID L. HOLMES, ET UX | 9-5-14 | 37.345 |
| L | DAVID L. HOLMES, ET UX | 9-5-14.2 | 4.995 |
| M | LARRY WHETZEL, JR. | 9-5-12 | 1.00 |
| N | LARRY WHETZEL, JR. | 9-5-11.2 | 2.355 |
| O | SHELLY ANN JORDAN, GEORGIA JORDAN LIFE ESTATE | 9-5-13 | 5.51 |
| P | SAVANNA WEST, ET AL. | 9-5-14.1 | 2.819 |
| Q | DAVID L. HOLMES, ET UX | 9-5-14.5 | 1.66 |
| R | ROBERT L. & MELINDA J. WHITE | 9-5-11 | 93.086 |
| S | MARK H. FOX, ET UX | 9-5-14.3 | 10.714 |
| T | BETTY R. OTT | 9-5-14.4 | 10.501 |
| U | MARK H. FOX, ET UX | 9-5-15 | 36.533 |
| V | SCOTT A. HOSTUTLER | 9-5-8 | 26.752 |
| W | MISTY CROW WITH ROBERT & ELSIE WHETZEL (LIFE ESTATE) | 9-5-8.2 | 1.973 |
| X | ISAAC MCKINNEY, ET UX | 9-5-8.1 | 2.875 |
| Y | YEAGER ADDITION TO BOWMAN RIDGE CEMETERY FROM PLAT OF SURVEY DB 509-374 | NOT ASSD | NOT ASSD |
| Z | ME CHURCH | 9-5-7 | 81.5 POLES (6 AC ASSD) |
| AA | JON B. CRAWFORD | 9-5-6.1 | 4.679 |
| BB | HARRY J. CRAWFORD, ET UX (LIFE ESTATE) | 9-2-12 | 80.718 |
| CC | NANCY L. SNYDER (LIFE ESTATE) | 9-5-6 | 82.858 |
| DD | CNX LAND LLC | 9-2-12.2 | 31.392 |
| EE | CNX LAND LLC | 9-5-6.9 | 22.392 |
| FF | CNX LAND RESOURCES INC. | 9-2-12.1 | 56.00 |

REFERENCES



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 677

Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 19, 20 18
REVISED FEBRUARY 20 & MARCH 9, 20 18
OPERATORS WELL NO. TEN HIGH 1N-20HU
API WELL NO. 47-051-02021
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P20HUR2.dwg
SCALE 1" = 2000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS



WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: GROUND = 1,319.90' ELEVATION PROPOSED = 1,310.06' WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10) DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER LAWRENCE & SHIRLEY CONKLE ESTS ACREAGE 139.79± ROYALTY OWNER ANDY PAUL & JACKIE KUHN, ET AL - SEE ADDITIONAL SHEETS ACREAGE 139.79± PROPOSED WORK: LEASE NO. SEE ADDITIONAL SHEETS

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,924' / TMD: 22,002'

WELL OPERATOR TUG HILL OPERATING, LLC ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME

PERMIT

TEN HIGH 1N LEASE
 UTICA UNIT - 356.78 AC±
 WELL 20HU
 TUG HILL OPERATING



| No. | Lease Name or No. | Tag | Parcel | Oil & Gas Royalty Owners | Deed Book/Page |
|-----|-------------------|-----|----------|----------------------------------------------------------|----------------|
| 1 | 10*15662 | A | 9-7-24 | LARRY LEE CONKLE | 863 354 |
| 2 | 10*15663 | A | 9-7-24 | ROY A CONKLE SR AND LORIE A CONKLE | 863 311 |
| 3 | 10*15664 | A | 9-7-24 | THERESA ANNE HUGHES | 863 343 |
| 4 | 10*15666 | A | 9-7-24 | BRENDA J WHETZEL | 863 635 |
| 5 | 10*47051.223.12 | B | 9-7-25.2 | ALICE GORBY MARTIN | 908 52 |
| 6 | 10*47051.223.13 | B | 9-7-25.2 | JAMES A GORBY | 908 42 |
| 7 | 10*47051.223.9 | B | 9-7-25.2 | LUNDA DELBERT | 908 32 |
| 8 | 10*47051.303.1 | B | 9-7-25.2 | THOMAS R WHITFIELD | 890 401 |
| 9 | 10*47051.303.2 | B | 9-7-25.2 | KIMBERLY A WHITFIELD | 890 403 |
| 10 | 10*15481 | B | 9-7-25.2 | DEAN P RIGBY AND SUSAN R RIGBY | 908 197 |
| 11 | 10*15482 | B | 9-7-25.2 | SUSAN NELSON | 908 203 |
| 12 | 10*15586 | B | 9-7-25.2 | JOHN OMER BOLTZ | 908 160 |
| 13 | 10*15750 | B | 9-7-25.2 | SANDRA K TRULL | 908 229 |
| 14 | 10*16058 | B | 9-7-25.2 | MATTIE RUTH JACKSON PRESCOTT | 908 231 |
| 15 | 10*16118 | B | 9-7-25.2 | RUBY RIDDLE JACKSON | 908 233 |
| 16 | 10*16297 | B | 9-7-25.2 | ROBERT A LEADBETTER AND M REBECCA LEADBETTER | 908 235 |
| 17 | 10*16298 | B | 9-7-25.2 | GEOFFREY A SIEFER AND STEPHANIE L SCHEFER | 908 238 |
| 18 | 10*16383 | B | 9-7-25.2 | ROBERT STEPHEN DRIGGERS | 908 224 |
| 19 | 10*16414 | B | 9-7-25.2 | MARY ELIZABETH DRIGGERS | 908 208 |
| 20 | 10*16415 | B | 9-7-25.2 | TERENCE J ANDERSON AND NANCY J ANDERSON | 908 213 |
| 21 | 10*16416 | B | 9-7-25.2 | CYNTHIA HUDSON | 908 219 |
| 22 | 10*16424 | B | 9-7-25.2 | ROBERT J RIGBY | 908 241 |
| 23 | 10*16448 | B | 9-7-25.2 | RALPH LAND JUANITA L CRIM | 908 584 |
| 24 | 10*16478 | B | 9-7-25.2 | MARION LAND EMILY CAMPBELL | 908 245 |
| 25 | 10*16514 | B | 9-7-25.2 | ALEX R CAMPBELL & JOYCE A CAMPBELL | 908 248 |
| 26 | 10*16515 | B | 9-7-25.2 | ANNA MARIE JACKSON | 908 251 |
| 27 | 10*16516 | B | 9-7-25.2 | WILSON ANDREW JACKSON | 908 253 |
| 28 | 10*16545 | B | 9-7-25.2 | ROBERT G FOUNDS AND ELLEN FOUNDS | 908 260 |
| 29 | 10*16652 | B | 9-7-25.2 | RICHARD THOMAS MIMS & VICKIE J MIMS | 908 263 |
| 30 | 10*16666 | B | 9-7-25.2 | MICHAEL P PYLE | 908 255 |
| 31 | 10*16667 | B | 9-7-25.2 | CHARLES F AND GAIL ANN PYLE | 908 266 |
| 32 | 10*16668 | B | 9-7-25.2 | JACK I AND MERRILEE ANN PYLE | 908 257 |
| 33 | 10*16669 | B | 9-7-25.2 | JOHN S AND PATRICIA S DADO | 908 269 |
| 34 | 10*16688 | B | 9-7-25.2 | CHERYLE M TRACEY | 927 475 |
| 35 | 10*16688 | B | 9-7-25.2 | SHERRY PYLE BAIR | 927 481 |
| 36 | 10*16689 | B | 9-7-25.2 | JOHN C FOUNDS | 927 478 |
| 37 | 10*16690 | B | 9-7-25.2 | RICARDO ORTIZ | 921 352 |
| 38 | 10*16720 | B | 9-7-25.2 | DONNA ELAINE BRASKETT | 921 152 |
| 39 | 10*16738 | B | 9-7-25.2 | CHARLES A RINE AND RUTH K RINE | 908 274 |
| 40 | 10*16742 | B | 9-7-25.2 | PAUL C WILSON | 927 490 |
| 41 | 10*16747 | B | 9-7-25.2 | WILLIAM DALE BRASKETT | 921 96 |
| 42 | 10*16787 | B | 9-7-25.2 | HERBERT BRIAN AND DONNA DRU CAMPBELL | 942 451 |
| 43 | 10*16798 | B | 9-7-25.2 | PATRICK A BANKIN AND ROBIN A BANKIN | 921 364 |
| 44 | 10*16800 | B | 9-7-25.2 | JAMES KENNETH JACKSON AND JULIE JACKSON | 921 98 |
| 45 | 10*16802 | B | 9-7-25.2 | CHRISTOPHER AND TAMMY RICHARDSON | 921 495 |
| 46 | 10*16804 | B | 9-7-25.2 | WILLIAM N AND SHERRY D TAYLOR | 921 510 |
| 47 | 10*16827 | B | 9-7-25.2 | DWIGHT D & MELODY G ANDERSON | 912 420 |
| 48 | 10*16806 | B | 9-7-25.2 | VIRGINIA WHITMAN TRUST DTD 7-25-1984 JON WHITMAN TRUSTEE | 921 528 |
| 49 | 10*16807 | B | 9-7-25.2 | DAVID TULLER AND SUSAN STORTS TULLER | 921 513 |
| 50 | 10*16808 | B | 9-7-25.2 | MICHAEL L ORTIZ | 921 349 |
| 51 | 10*16815 | B | 9-7-25.2 | HAROLD W PYLE | 921 357 |
| 52 | 10*16819 | B | 9-7-25.2 | TERESA ORTIZ BIGGS | 921 147 |
| 53 | 10*16821 | B | 9-7-25.2 | SHEILA BRASKETT WEICHEY | 921 516 |
| 54 | 10*16835 | B | 9-7-25.2 | RICK A AND LENORE A STORTS | 921 507 |
| 55 | 10*16837 | B | 9-7-25.2 | TERRY LAND THELMA A POFF | 927 472 |
| 56 | 10*16838 | B | 9-7-25.2 | ROBERT G FUNARI | 921 82 |
| 57 | 10*16839 | B | 9-7-25.2 | JAMES B FOUNDS AND LYNN M MOWERY | 921 75 |
| 58 | 10*16863 | B | 9-7-25.2 | TINA MOORE | 921 334 |
| 59 | 10*16868 | B | 9-7-25.2 | MICHAEL W STORTS AND JESSICA M STORTS | 921 504 |
| 60 | 10*16879 | B | 9-7-25.2 | MARK E AND LESLEY A STORTS | 921 501 |
| 61 | 10*16880 | B | 9-7-25.2 | BEVERLY ANN STORTS | 921 498 |
| 62 | 10*16902 | B | 9-7-25.2 | MARY BARCAW DUKE | 921 106 |
| 63 | 10*16962 | B | 9-7-25.2 | DENNIS P AND BARBARA EZELL FLORY | 921 70 |
| 64 | 10*16976 | B | 9-7-25.2 | LESTER G AND CONSTANCE B NICKOLSON | 921 343 |
| 65 | 10*16977 | B | 9-7-25.2 | JEREMY COCHENOUR | 921 102 |
| 66 | 10*16987 | B | 9-7-25.2 | LAURIE EZELL PERRY | 921 355 |
| 67 | 10*16989 | B | 9-7-25.2 | BRITTANY RICHARDSON | 916 135 |
| 68 | 10*16991 | B | 9-7-25.2 | MARYELLEN FOUNDS AND LAUREN FOUNDS | 921 79 |
| 69 | 10*16995 | B | 9-7-25.2 | THOMAS RANKIN | 917 75 |
| 70 | 10*17130 | B | 9-7-25.2 | CINDY L BARGER | 921 137 |
| 71 | 10*17155 | B | 9-7-25.2 | JESSE LEON JR AND TERESA GAIL EZELLE | 921 118 |
| 72 | 10*17156 | B | 9-7-25.2 | HENRI NELL JACKSON KENT BARNES | 921 139 |
| 73 | 10*17157 | B | 9-7-25.2 | JAMES N REEVES JR AND RITA M REEVES | 921 367 |
| 74 | 10*17198 | B | 9-7-25.2 | THOMAS G AND DIANE W BAYLESS | 921 141 |
| 75 | 10*17205 | B | 9-7-25.2 | SANDRA JEAN WILSON | 921 524 |
| 76 | 10*17208 | B | 9-7-25.2 | PATRICK S GALLAGHER AND JOYCE ANN FOUNDS | 921 86 |
| 77 | 10*17274 | B | 9-7-25.2 | DAVID H WILSON | 921 474 |
| 78 | 10*17275 | B | 9-7-25.2 | JOHN R REEVES AND MONA G REEVES | 921 373 |
| 79 | 10*17276 | B | 9-7-25.2 | BERTHA EZELL WYATT | 921 526 |
| 80 | 10*17278 | B | 9-7-25.2 | MICHAEL L EZELLE | 921 121 |
| 81 | 10*17339 | B | 9-7-25.2 | JOSEPH W FOUNDS | 921 76 |
| 82 | 10*17377 | B | 9-7-25.2 | MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE | 921 123 |
| 83 | 10*17416 | B | 9-7-25.2 | ANDREW M ORTIZ | 921 348 |
| 84 | 10*17438 | B | 9-7-25.2 | DENNIS M WILSON | 921 478 |
| 85 | 10*17440 | B | 9-7-25.2 | KENDRA WALISA | 927 484 |
| 86 | 10*17441 | B | 9-7-25.2 | RALPH J WILSON | 921 522 |
| 87 | 10*17442 | B | 9-7-25.2 | SHANE ALLEN AND MENDY JEAN ALLEN | 921 134 |
| 88 | 10*17443 | B | 9-7-25.2 | MICHELLE MORROW-BACK | 921 337 |
| 89 | 10*17444 | B | 9-7-25.2 | KELLY FOUNDS CAMPBELL | 921 99 |
| 90 | 10*17449 | B | 9-7-25.2 | PHYLLIS J BLAKE | 921 150 |
| 91 | 10*17482 | B | 9-7-25.2 | TERESA EZELLE RALYA AND DAVID L RALYA | 927 487 |
| 92 | 10*17483 | B | 9-7-25.2 | RICHARD I PYLE | 921 359 |
| 93 | 10*17484 | B | 9-7-25.2 | NELDA S JACKSON | 921 330 |
| 94 | 10*17485 | B | 9-7-25.2 | MARGIE ANN JACKSON ROBBINS GRAHAM | 921 91 |
| 95 | 10*17525 | B | 9-7-25.2 | JEFFREY L REEVES AND JODY L REEVES | 921 370 |
| 96 | 10*17527 | B | 9-7-25.2 | JAMES MICHAEL EZELL AND LUCILLE D EZELL | 921 111 |
| 97 | 10*17538 | B | 9-7-25.2 | CHERYL RANKIN-KING | 952 160 |
| 98 | 10*17552 | B | 9-7-25.2 | JOHN BEVACQUA AND PATRICIA A BEVACQUA | 921 144 |
| 99 | 10*17554 | B | 9-7-25.2 | MICHAEL T RANKIN | 921 361 |
| 100 | 10*17561 | B | 9-7-25.2 | ROGER L TYRELL AND KATHRYN L TYRELL | 921 519 |

FILE NO. 8655P20HUR2.dwg

DATE JANUARY 19, 20 17

REVISED FEBRUARY 20 & MARCH 9, 20 18

OPERATORS WELL NO. TEN HIGH 1N-20HU

API WELL NO. 47 — 051 — 030000
 STATE COUNTY PERMIT



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS



P.S. 677

Gregory A. Smith

WELL OPERATOR TUG HILL OPERATING, LLC
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
 ADDRESS CT CORPORATION SYSTEM
 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

COUNTY NAME PERMIT

TEN HIGH 1N LEASE
 UTICA UNIT - 356.78 AC±
 WELL 20HU
 TUG HILL OPERATING



| No. | Lease Name or No. | Tag | Parcel | Oil & Gas Royalty Owner - Continued | Deed Book/Page |
|-----|-------------------|-----|----------|--------------------------------------------------------------------|----------------|
| 101 | 10*17564 | B | 9-7-25.2 | JAMES RONALD NICKOLSON AND TRACEY E NICKOLSON | 921 340 |
| 102 | 10*17565 | B | 9-7-25.2 | JESSE ALLEN JACKSON AND ELIZABETH C JACKSON | 921 327 |
| 103 | 10*17566 | B | 9-7-25.2 | NATHAN P ERDOSSY AND BARBARA T ERDOSSY | 921 108 |
| 104 | 10*17568 | B | 9-7-25.2 | JAMES M JACKSON | 921 325 |
| 105 | 10*17589 | B | 9-7-25.2 | MARY CHRISTINE MCKENNA | 921 332 |
| 106 | 10*17677 | B | 9-7-25.2 | GEORGE M GONTA JR | 921 89 |
| 107 | 10*17744 | B | 9-7-25.2 | SAM PRESLEY EZELL | 921 116 |
| 108 | 10*17744 | B | 9-7-25.2 | SAM PRESLEY EZELL | 921 116 |
| 109 | 10*17983 | B | 9-7-25.2 | HOLLY SUE CUTHBERT | 925 380 |
| 110 | 10*18021 | B | 9-7-25.2 | CHRISTOPHER A HANIFAN AND JACKIE F HANIFAN | 927 267 |
| 111 | 10*18022 | B | 9-7-25.2 | DALE P WARD AND CYNTHIA J WARD | 927 264 |
| 112 | 10*19524 | B | 9-7-25.2 | THE ESTATE OF AGNES IRENE EZELL CLARK BY DAVID M EDWARDS, EXECUTOR | 942 633 |
| 113 | 10*19692 | B | 9-7-25.2 | KENDRA WALUSA | 924 484 |
| 114 | 10*19693 | B | 9-7-25.2 | MARIO R FUNARI AIF ROBERT G FUNARI | 936 145 |
| 115 | 10*19695 | B | 9-7-25.2 | VIRGINIA P FOLUNDS KASSERMAN ET | 944 333 |
| 116 | 10*19939 | B | 9-7-25.2 | ROBERT J MILLS & SHERRA SUE MILLS | 949 212 |
| 117 | 10*47051.223.15 | B | 9-7-25.2 | LARRY D TAUNT AND NANCY L TAUNT | 908 14 |
| 118 | 10*47051.223.20 | B | 9-7-25.2 | BARBARA A BUZZARD | 908 24 |
| 119 | 10*47051.223.21 | B | 9-7-25.2 | GARY T WARD AND SHARON D WARD | 908 19 |
| 120 | 10*47051.223.24 | B | 9-7-25.2 | JO DEE K DAVIS | 908 136 |
| 121 | 10*47051.223.25 | B | 9-7-25.2 | JOANNE WELCH | 908 141 |
| 122 | 10*47051.223.26 | B | 9-7-25.2 | WENDY L SMARKEL | 908 69 |
| 123 | 10*47051.223.27 | B | 9-7-25.2 | TIMI J HOBBS | 908 277 |
| 124 | 10*47051.223.29 | B | 9-7-25.2 | PATSY JO RAUJ | 908 155 |
| 125 | 10*47051.223.30 | B | 9-7-25.2 | LAURIE DRIGGERS MANDERSON | 908 165 |
| 126 | 10*47051.223.33 | B | 9-7-25.2 | NANCY CIAFFAGNONE HOUSLEY | 908 187 |
| 127 | 10*47051.223.35 | B | 9-7-25.2 | DEBRA L CIAFFAGNONE | 908 192 |
| 128 | 10*47051.223.6 | B | 9-7-25.2 | JOSHUA RINE AND REBECCA RINE | 907 634 |
| 129 | 10*15501 | C | 9-7-12.1 | RONALD AND EDNA MOORE | 661 449 |
| 130 | 10*47051.094.0 | D | 9-7-11 | MARK H FOX | 864 163 |
| 131 | 10*19117 | D | 9-7-11 | MARK H. FOX AND BETTA J. FOX, HIS WIFE | 864 163 |
| 132 | | D | 9-7-11 | MARK H. FOX AND BETTA J. FOX, HIS WIFE | 864 163 |
| 133 | 10*19143 | E | 9-7-28 | VICTOR CAMERON CLAIRE CAMERON | 572 171 |
| 134 | 10*19565 | F | 9-7-11.1 | WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS | 947 566 |
| 135 | 10*19135 | G | 9-7-29.1 | CAROL J ANDERSON WILLIAM ROBERT ANDERSON | 722 226 |
| 136 | 10*19135 | H | 9-7-27 | CAROL J ANDERSON WILLIAM ROBERT ANDERSON | 722 226 |
| 137 | | I | 9-7-8 | HENDERSON ROBERT ET AL | 697 215 |
| 138 | | I | 9-7-8 | SALEM CHURCH OF CHRIST OF GLEN EASTON | 867 558 |
| 139 | | I | 9-7-8 | HILLVIEW TERRACE CHURCH OF CHRIST | 880 400 |
| 140 | 10*19031 | J | 9-7-7 | ROBERT G HUBBS SCARLETT E OTTE HUBBS | 677 521 |
| 141 | 10*47051.075.0 | K | 9-5-14 | DAVID L HOLMES AND TERRI L HOLMES | 869 204 |
| 142 | 10*19118 | K | 9-5-14 | DAVID L HOLMES AND TERRI L HOLMES | 869 204 |
| 143 | 10*19118 | L | 9-5-14.1 | DAVID L HOLMES AND TERRI L HOLMES | 869 204 |
| 144 | | M | 9-5-12 | WHETZEL LARRY J JR | 869 216 |
| 145 | | N | 9-5-11.2 | WHETZEL LARRY J JR | 869 216 |
| 146 | | N | 9-5-11.2 | BONAR GRACE LAURA | 865 198 |
| 147 | | N | 9-5-11.2 | HADLEY BARBARA LOIS | 868 21 |
| 148 | | N | 9-5-11.2 | ORTOLL AMBER A | 871 391 |
| 149 | | N | 9-5-11.2 | BONAR ROBERT GLENN | 868 92 |
| 150 | | N | 9-5-11.2 | SCHILLING JAMES MCPHERSON | 868 202 |
| 151 | | N | 9-5-11.2 | FAUST LESTER D | 870 560 |
| 152 | | N | 9-5-11.2 | BOGATKO RICHARD C | 870 557 |
| 153 | | N | 9-5-11.2 | BRUNNER WILL A JR ET UX | 888 30 |
| 154 | | N | 9-5-11.2 | FAUST MARJORIE JARETTA | 888 10 |
| 155 | | N | 9-5-11.2 | DAY FRANK B | 871 583 |
| 156 | | N | 9-5-11.2 | MCWHORTER IDEN SCOTT | 890 475 |
| 157 | | N | 9-5-11.2 | MITCHELL LOTA JO ET VIR | 894 395 |
| 158 | | N | 9-5-11.2 | BONAR DAVID L | 890 475 |
| 159 | | N | 9-5-11.2 | SALO HARRY ET UX - SFX | 894 395 |
| 160 | | N | 9-5-11.2 | ARMIGER STEVEN ALAN - SFX | 891 69 |
| 161 | | N | 9-5-11.2 | FAIRBROTHER KATHERINE ANN LUONGO - SFX | 901 38 |
| 162 | | N | 9-5-11.2 | DURINSKY JOSEPH - SFX | 893 244 |
| 163 | | N | 9-5-11.2 | KACHELE ROBIN - SFX | 893 180 |
| 164 | | N | 9-5-11.2 | SHIREY KATHLEEN - SFX | 901 134 |
| 165 | | N | 9-5-11.2 | EVANS SHARON LOUISE - SFX | 915 597 |
| 166 | | N | 9-5-11.2 | SCHMITT ALBERT JOHN - SFX | 899 404 |
| 167 | | N | 9-5-11.2 | MASSARO ANTHONY - SFX | 899 452 |
| 168 | | N | 9-5-11.2 | FERRANDINO MARLENE R - SFX | 899 461 |
| 169 | | N | 9-5-11.2 | PAPPA PHILIP J - SFX | 899 458 |
| 170 | | N | 9-5-11.2 | FELDMAN BARBARA - SFX | 899 455 |
| 171 | | N | 9-5-11.2 | DODARD DENISE R - SFX | 900 49 |
| 172 | | N | 9-5-11.2 | MAZZOLA LOUISE M - SFX | 901 431 |
| 173 | | N | 9-5-11.2 | PAPPA VICTORIA C - SFX | 901 416 |
| 174 | | N | 9-5-11.2 | PAPPAS JAYME - SFX | 905 119 |
| 175 | | N | 9-5-11.2 | PAPPAS ROBYN - SFX | 905 115 |
| 176 | | N | 9-5-11.2 | IDVACCHINI ADREANNA - SFX | 943 589 |
| 177 | | O | 9-5-13 | JORDAN GEORGIA | 687 615 |
| 178 | | P | 9-5-14.1 | WEST SAVANNAH N ET VIR | 876 98 |
| 179 | 10*19118 | Q | 9-5-14.5 | DAVID L HOLMES AND TERRI L HOLMES | 869 204 |
| 180 | | R | 9-5-11 | WHITE FREDDIE ET UX | 655 565 |
| 181 | | R | 9-5-11 | BONAR GRACE LAURA | 865 198 |
| 182 | | R | 9-5-11 | HADLEY BARBARA LOIS | 868 21 |
| 183 | | R | 9-5-11 | ORTOLL AMBER A | 871 391 |
| 184 | | R | 9-5-11 | BONAR ROBERT GLENN | 868 92 |
| 185 | | R | 9-5-11 | SCHILLING JAMES MCPHERSON | 868 202 |
| 186 | | R | 9-5-11 | FAUST LESTER D | 870 560 |
| 187 | | R | 9-5-11 | BOGATKO RICHARD C | 870 557 |
| 188 | | R | 9-5-11 | BRUNNER WILL A JR ET UX | 888 30 |
| 189 | | R | 9-5-11 | FAUST MARJORIE JARETTA | 888 10 |
| 190 | | R | 9-5-11 | DAY FRANK B | 871 583 |
| 191 | | R | 9-5-11 | MCWHORTER IDEN SCOTT | 890 475 |
| 192 | | R | 9-5-11 | MITCHELL LOTA JO ET VIR | 894 395 |
| 193 | | R | 9-5-11 | BONAR DAVID L | 890 475 |
| 194 | | R | 9-5-11 | SALO HARRY ET UX - SFX | 894 395 |
| 195 | | R | 9-5-11 | ARMIGER STEVEN ALAN - SFX | 891 69 |
| 196 | | R | 9-5-11 | FAIRBROTHER KATHERINE ANN LUONGO - SFX | 901 38 |
| 197 | | R | 9-5-11 | DURINSKY JOSEPH - SFX | 893 244 |
| 198 | | R | 9-5-11 | KACHELE ROBIN - SFX | 893 180 |
| 199 | | R | 9-5-11 | SHIREY KATHLEEN - SFX | 901 134 |
| 200 | | R | 9-5-11 | EVANS SHARON LOUISE - SFX | 915 597 |

FILE NO. 8655P20HUR2.dwg

DATE JANUARY 19, 20 17

REVISED FEBRUARY 20 & MARCH 9, 20 18

OPERATORS WELL NO. TEN HIGH 1N-20HU

API WELL NO. 47 - 051 - 02021464
 STATE COUNTY PERMIT



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS



P.S. 677

Gregory A. Smith

COUNTY NAME

PERMIT

WELL OPERATOR TUG HILL OPERATING, LLC
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
 ADDRESS CT CORPORATION SYSTEM
 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

TEN HIGH 1N LEASE
 UTICA UNIT - 356.78 AC±
 WELL 20HU
 TUG HILL OPERATING



| No. | Lease Name or No. | Tag | Parcel | Oil & Gas Royalty Owner - Continued | Deed Book/Page |
|-----|-------------------|-----|--------------|-------------------------------------------------------------------------|----------------|
| 201 | | R | 9-5-11 | SCHMITT ALBERT JOHN - SFX | 899 484 |
| 202 | | R | 9-5-11 | MASSARO ANTHONY - SFX | 899 452 |
| 203 | | R | 9-5-11 | FERRANDINO MARLENE R - SFX | 899 461 |
| 204 | | R | 9-5-11 | PAPPA PHILIP J - SFX | 899 458 |
| 205 | | R | 9-5-11 | FELDMAN BARBARA - SFX | 899 455 |
| 206 | | R | 9-5-11 | DODARO DENISE R - SFX | 900 49 |
| 207 | | R | 9-5-11 | MAZZOLA LOUISE M - SFX | 901 431 |
| 208 | | R | 9-5-11 | PAPPA VICTORIA C - SFX | 901 416 |
| 209 | | R | 9-5-11 | PAPPAS JAYME - SFX | 905 119 |
| 210 | | R | 9-5-11 | PAPPAS ROBYN - SFX | 905 116 |
| 211 | | R | 9-5-11 | IOVACCHINI ADREANNA - SFX | 943 589 |
| 212 | 10*19006 | S | 9-5-14.3 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | 687 598 |
| 213 | 10*15506 | T | 9-5-14.4 | BETTY R. OTT | 687 604 |
| 214 | 10*19006 | U | 9-5-15 | MARK H. FOX AND RETTA J. FOX, HIS WIFE | 687 598 |
| 215 | 10*19206 | V | 9-5-8 | SCOTT A HUSTUTLER | 724 208 |
| 216 | | W | 9-5-8.2 | WHITZEL ROBERT LETUX | 772 523 |
| 217 | | X | 9-5-8.1 | MCKINNEY ISAAC LETUX | 701 472 |
| 218 | | Y | NOT ASSESSED | YEAGER ADDITION TO BOWMAN RIDGE CEMETERY FROM PLAT OF SURVEY DB 509/374 | 867 110 |
| 219 | | Z | 9-5-7 | BOWMAN UNITED METHODIST CHURCH | 867 110 |
| 220 | | AA | 9-5-6.1 | DAKAN JOSEPH D | 694 71 |
| 221 | | AA | 9-5-6.1 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | 695 175 |
| 222 | | BB | 9-2-12 | CRAWFORD HARRY ETAL | 661 156 |
| 223 | | CC | 9-5-6 | NANCY L. SNYDER | 695 191 |
| 224 | | CC | 9-5-6 | DAKAN JOSEPH D - SFX | 694 71 |
| 225 | | CC | 9-5-6 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | 695 175 |
| 226 | | DD | 9-2-12.2 | CRAWFORD HARRY ETAL | 661 156 |
| 227 | | EE | 9-5-6.9 | DAKAN JOSEPH D - SFX | 694 71 |
| 228 | | EE | 9-5-6.9 | RAJU PATSY JO AKA GORBY PATSY JO - SFX | 695 175 |
| 229 | | FF | 9-2-12.1 | CRAWFORD HARRY ETAL | 661 156 |

FILE NO. 8655P20HUR2.dwg

DATE JANUARY 19, 20 17

REVISED FEBRUARY 20 & MARCH 9, 20 18

OPERATORS WELL NO. TEN HIGH 1N-20HU

API NO. 47
 WELL NO. 051
 STATE COUNTY PERMIT 02021H6A



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS



P.S. 677

Gregory A. Smith

WELL OPERATOR TUG HILL OPERATING, LLC
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
 FORT WORTH, TX 76107

DESIGNATED AGENT DIANNA STAMPER
 ADDRESS CT CORPORATION SYSTEM
 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

COUNTY NAME

PERMIT

51-02021

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASA
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$3.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 17th day of May, 2016 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and TH EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated May 2, 2016 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", and as depicted in Exhibits "A-1" and "A-2", attached hereto and made a part hereof (hereinafter the "Leases"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

#27
for now

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MAR 13 2018

WV Department of
Environmental Protection

SI-00021

ASSIGNMENT, BILL OF SALE AND CONVEYANCE

STATE OF WEST VIRGINIA }
 }
COUNTY OF MARSHALL }

Marshall County
Jan Pest, Clerk
Instrument 1427133
07/18/2017 @ 10:55:43 AM
ASSIGNMENTS
Book 40 @ Page 26
Pages Recorded 5
Recording Cost \$ 11.00

This Assignment, Bill of Sale and Conveyance (this "Assignment"), dated this 16th day of June, 2017, is made by SWN PRODUCTION COMPANY, LLC, a Texas limited liability company with a notice address of 10000 Energy Drive, Spring, Texas 77389-4954, ("Assignor") in favor of STATOIL USA ONSHORE PROPERTIES INC, a Delaware corporation with a notice address of 6300 Bridge Point Parkway, Building 2, Suite 100, Austin, Texas 78730 ("Assignee").

Capitalized terms used herein but not otherwise defined herein shall have the meanings ascribed to such terms in that certain Development Agreement, dated as of December 22, 2014 (the "Development Agreement"), between Assignor and Assignee. If there is a conflict between the terms of this Assignment and the terms of the Development Agreement, the terms of the Development Agreement shall control and nothing in this Assignment shall affect the rights and remedies of Assignor and Assignee pursuant to the Development Agreement.

As used in this Assignment, Effective Time shall mean June 16, 2017.

NOW, THEREFORE, for and in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor does hereby GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee an undivided twenty five percent (25%) interest (the "Conveyed Interest") of all of Assignor's right, title and interest in, to and under the oil, gas and mineral leases shown on Exhibit "A", (the "Acquired Interests"), subject to the terms and reservations hereof:

It is the intent of Assignor to convey (and this Assignment hereby conveys) to Assignee the Conveyed Interest in the Acquired Interests from and after the Effective Time, subject to the terms and reservations hereof, regardless of the omission of any lease or leases, errors in description, any incorrect or misspelled names or any transcribed or incorrect recording references, in each case, of the Acquired Interests.

TO HAVE AND TO HOLD all and singular such Conveyed Interest together with all rights, titles, interests, estates, remedies, powers and privileges thereunto appertaining unto Assignee and Assignee's successors and assigns forever, subject to the terms and conditions of the Development Agreement.

Assignor does hereby bind itself, its successors and assigns, to warrant and forever defend all and singular title to the Acquired Interests unto Assignee and Assignee's successors and assigns, against

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Environmental Protection

51-02021

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into this 14th day of February, 2018, between TUG HILL OPERATING, LLC (THQ), a Texas limited liability company, whose address is 1320 S. University Blvd., Suite 500, Fort Worth, TX 76107 and CHEVRON U.S.A., INC. (Chevron), a Pennsylvania corporation, whose address is 700 Cherrington Parkway, Coraopolis, PA 15108.


PARTIES AND AGREEMENT REFERENCE: THQ and Chevron entered into a letter agreement ("Letter Agreement") dated February 14th, 2018 (the "Commencement Date") outlining pursuit of definitive agreements to allow THQ the right to permit, drill, extract, produce and market oil and gas from those certain oil and gas interests controlled by Chevron in the Meade District of Marshall County, West Virginia, as more fully described in Exhibit A attached hereto, made a part hereof, and incorporated herein by reference.

1. **TERM:** The rights granted in the Letter Agreement will terminate upon the earlier of (i) one hundred eighty (180) days from the Commencement Date, (ii) Chevron's revocation of the rights granted in the Letter Agreement, or (iii) the parties entering into the definitive agreement described in the Letter Agreement. Upon termination of the Letter Agreement under subsection (i) or (ii) of the immediately preceding sentence, THQ will record a surrender of this Memorandum and withdraw any related well work permit requests.

2. **MEMORANDUM FOR RECORDING PURPOSES ONLY:** This Memorandum is for recording purposes only and does not supplement or supersede the parties' respective rights set forth in the Letter Agreement or other agreements.

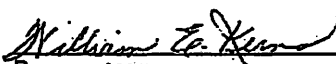
IN WITNESS WHEREOF, the parties have signed their names hereto as of the date first above written.

Tug Hill Operating, LLC



By: Sean Willis
Its: VP, Engineering &
Development Manager – Appalachia

Chevron U.S.A., Inc.



By: William E. Kerns
Its: Attorney-in-Fact

Marshall County
Jan Pest, Clerk
Instrument 1437069
02/27/2018 @ 03:43:58 PM
AGREEMENT
Book 961 @ Page 303
Pages Recorded 0
Recording Cost \$ 14.00

Marshall County
Jan Pest, Clerk
Instrument 1436705
02/16/2018 @ 02:16:57 PM
AGREEMENT
Book 960 @ Page 409
Pages Recorded 2
Recording Cost \$ 11.00

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Environmental Protection



February 28, 2018

WV Department of Environmental Protection
Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304
Attention: Laura Adkins

RE: Ten High 1N-20HU

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21/9 and 21/11 in the area reflected on the Ten High 1N-20HU well plat. THO has conducted a full title search in the relevant Court House to confirm its' ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me at 304-376-0111 or by email at amiller@tug-hillop.com.

Sincerely,

A handwritten signature in blue ink that reads "Amy L. Miller".

Amy L. Miller
Permit Specialist – Appalachia

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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION**

Date of Notice Certification: 02/27/2018

API No. 47- 051 - 02021
Operator's Well No. Ten High 1N-20HU
Well Pad Name: Ten High

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

| | | |
|---------------------------------------|----------------------------------------------------------------------|-------------------------------|
| State: <u>West Virginia</u> | UTM NAD 83 | Easting: <u>527,318.92</u> |
| County: <u>Marshall</u> | | Northing: <u>4,406,354.29</u> |
| District: <u>Meade</u> | Public Road Access: <u>Shepherd Ridge Lane (Co. Rt. 21/9)</u> | |
| Quadrangle: <u>Glen Easton 7.5'</u> | Generally used farm name: <u>LAWRENCE & SHIRLEY CONKLE, ESTS</u> | |
| Watershed: <u>(HUC 10) Fish Creek</u> | | |

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following: *PLEASE CHECK ALL THAT APPLY <input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED <input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED <input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH) <input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION <input checked="" type="checkbox"/> 5. PUBLIC NOTICE <input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION | | OOG OFFICE USE ONLY <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED/ NOT REQUIRED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED <input type="checkbox"/> RECEIVED |
| RECEIVED Office of Oil and Gas MAR 13 2018 | | |

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Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

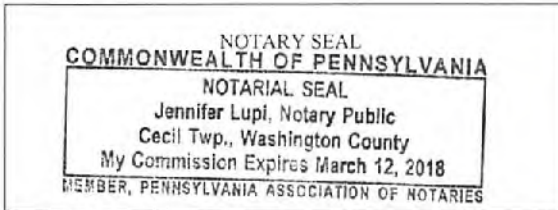
51-02021

WW-6AC
(1/12)

Certification of Notice is hereby given:

THEREFORE, I Amy L. Miller, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

| | | | |
|----------------|-------------------------------------------|------------|--------------------------------------------------------------|
| Well Operator: | <u>Tug Hill Operating, LLC</u> | Address: | <u>380 Southpointe Blvd, Southpointe Plaza II, Suite 200</u> |
| By: | <u>Amy L. Miller <i>Amy Miller</i></u> | | <u>Canonsburg, PA 15317</u> |
| Its: | <u>Permitting Specialist - Appalachia</u> | Facsimile: | <u>724-338-2030</u> |
| Telephone: | <u>724-749-8388</u> | Email: | <u>amiller@tug-hillop.com</u> |



Subscribed and sworn before me this 27th day of Feb. 2018.
Jennifer Lupi Notary Public
 My Commission Expires March 12, 2018

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

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**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION**

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 2/26/2018 **Date Permit Application Filed:** 2/27/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)
 Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle
 Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A.
 Address: 75 Arlington Avenue
Moundsville, WV 26041 *See Attached*

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: Robert G. Hubbs and Scarlett E. Otte
 Address: 132 Shepherds Ridge Lane
Glen Easton, WV 26039

Name: None
 Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
 Name: None
 Address: _____

COAL OWNER OR LESSEE
 Name: Murray Energy Corporation
 Address: 46225 National Road
St. Clairsville, OH 43950

COAL OPERATOR
 Name: Same as above coal owner
 Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
 Name: *See supplement page 1A attached
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: None
 Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas

MAR 13 2018

WW-6A
(8-13)

MAR 13 2018

API NO. 47- 651 - 0 2021
OPERATOR WELL NO. Ten High 1N-20HU
Well Pad Name: Ten High

WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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WV Department of
Environmental Protection

Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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Environmental Protection

WW-6A
(8-13)

API NO. 47- 051 - 02021
OPERATOR WELL NO. Ten High 1N-20HU
Well Pad Name: Ten High

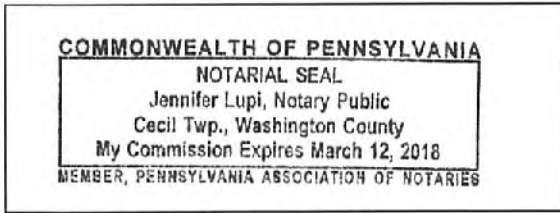
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hill-op.com *Amey Miller*

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 26th day of Feb, 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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Environmental Protection

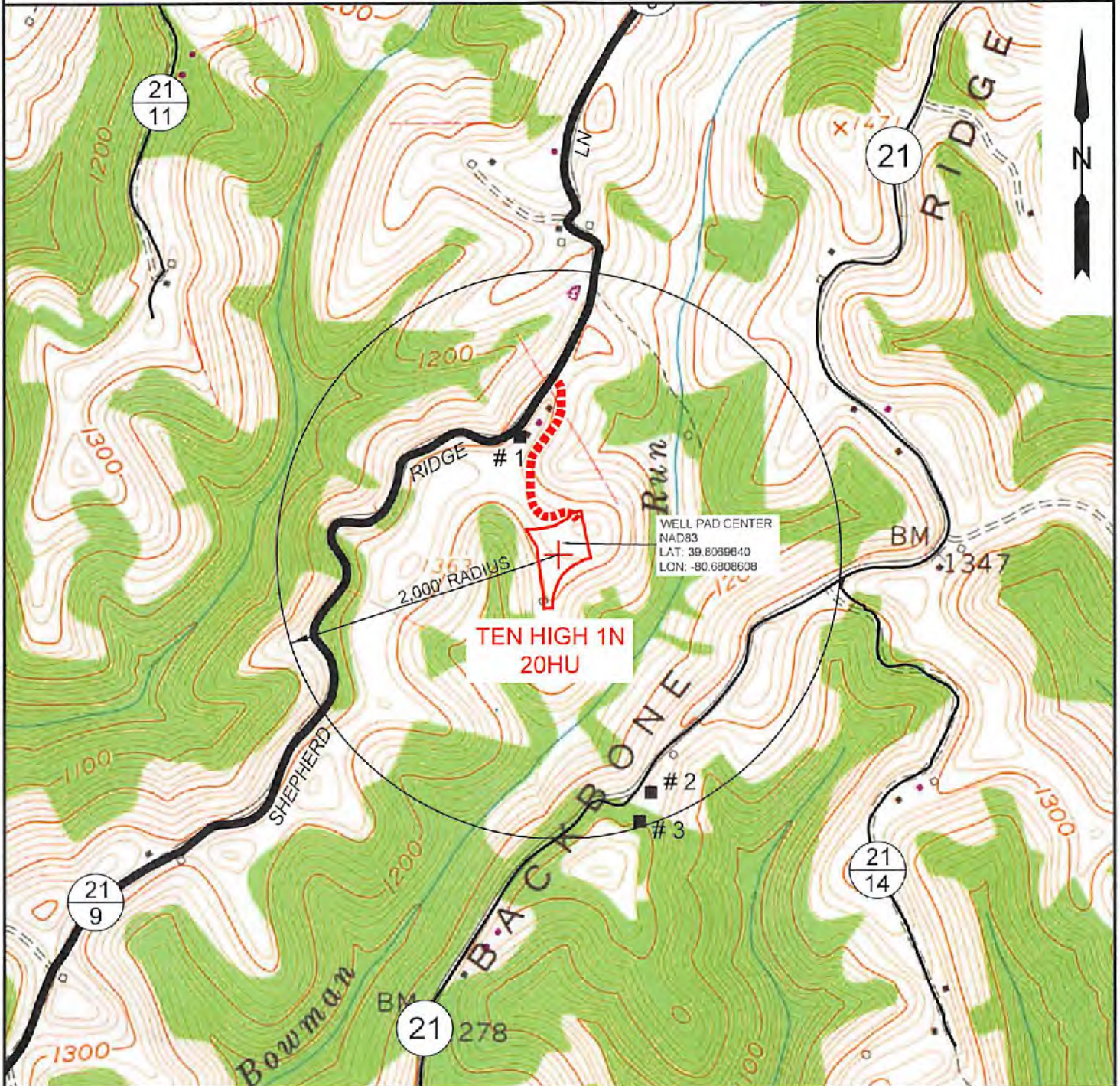
WW-6A

MAR 13 2018

WV Department of
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PROPOSED TEN HIGH 1N - 20HU

SUPPLEMENT PG. 1B



NOTE: THERE APPEARS TO BE THREE (3) POSSIBLE WATER SOURCES WITHIN 2,000'.

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 112 Vanhorn Drive • Glenville, WV 26351 • (304) 482-6834
www.slsurveys.com

| | | | |
|------------------|----------|-------------------------|------------|
| TOPO SECTION: | | OPERATOR: | |
| GLEN EASTON 7.5' | | PREPARED FOR: | |
| COUNTY | DISTRICT | TUG HILL OPERATING, LLC | |
| MARSHALL | MEADE | 380 SOUTHPOINTE BLVD | |
| | | SUITE 200 | |
| | | CANONSBURG, PA 15317 | |
| DRAWN BY | JOB NO. | DATE | SCALE |
| K.G.M. | 8655 | 01-08-18 | 1" = 1000' |

TUG HILL
OPERATING

WW-6A Notice of Application Attachment 1 of 1

Surface Owner(s):

Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D.
154 Conkle Drive
Glen Easton, WV 26039

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Exhibit WW-6A

Supplement Pg. 1A

Tug Hill Operating, LLC
 380 Southpointe Blvd, Suite 200
 Cannonsburg, PA 15137

Residences within Two-Thousand Feet (2,000')

Well: Ten High 1N – 20HU
 District: Meade (House #'s 1-3)
 State: WV

There are three (3) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>House 1 TM 7 Pcl. 24 Lawrence & Shirley Conkle Ests Phone: 304-845-1808; 304-848-1808 Physical Address: 77B Shepards Lane 932 Shepherd Ridge Ln. Glen Easton, WV 26039 Tax Address: 75 Arlington Ave. Moundsville, WV 26041</p> | <p>House 2 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1834 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: 1838 Sallys Backbone Rd. Glen Easton, WV 26039</p> | <p>House 3 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1838 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: Same</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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WV Department of
 Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF PLANNED OPERATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 02/26/2018 **Date Permit Application Filed:** 02/27/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A ✓
Address: 75 Arlington Avenue
Moundsville, WV 26041 ****See Attached****

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

| | | | | |
|-------------|----------------------------|---------------------------|--------------------------------------------|---------------------|
| State: | <u>West Virginia</u> | UTM NAD 83 | Easting: | <u>527,318.92</u> |
| County: | <u>Marshall</u> | | Northing: | <u>4,406,354.29</u> |
| District: | <u>Meade</u> | Public Road Access: | <u>Shepherd Ridge Lane (Co. Rt. 21/9)</u> | |
| Quadrangle: | <u>Glen Easton 7.5'</u> | Generally used farm name: | <u>LAWRENCE & SHIRLEY CONKLE, ESTS</u> | |
| Watershed: | <u>(HUC 10) Fish Creek</u> | | | |

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hilltop.com

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

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WV Department of
Environmental Protection

51-02021

Operator Well Nos. TEN HIGH 1N-20HU

WW-6A5 Notice of Planned Operation..... Attachment 1 of 1

Surface Owner(s):

Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D.
154 Conkle Drive
Glen Easton, WV 26039

Robert G. Hubbs and Scarlett E. Otte
132 Shepherds Ridge Lane
Glen Easton, WV 26039

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51-02021

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

**1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505**

**Jim Justice
Governor**

**Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways**

December 7, 2017

James A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Ten High 1N Pad, Marshall County
Ten High 1N Unit-20HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2017-0127 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/9 SLS.

The operator has signed a STATEWIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G Coordinator

Cc: Jonathan White
Tug Hill Operating, LLC
CH, OM, D-6
File

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MAR 13 2018

WV Department of
Environmental Protection



51-02021

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Ten High 1N-20HU

| PRODUCT NAME: | CHEMICAL DESCRIPTION: | PRODUCT USE: | HAZARDOUS COMPONENT: |
|----------------------|----------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GBW-20C | Hemicellulase Breaker | Breaker - Water | None |
| ALPHA 1427 | | Biocide | Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5 |
| FRAC SAND | Silica Sand (various Mesh sizes) | Proppant | Crystalline silica (quartz) CAS# 14808-60-7 |
| S-8C, Sand | Silica Sand (100 mesh) | Sand | Silica – CAS# 14808-60-7 |
| GW-3LDF | | Gellant - Water | Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0 |
| FRW-18 | | Friction Reducer | Hydrotreated light distillate CAS# 064742-47-8 |
| Scaletrol | | Scale Inhibitor | Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6 |

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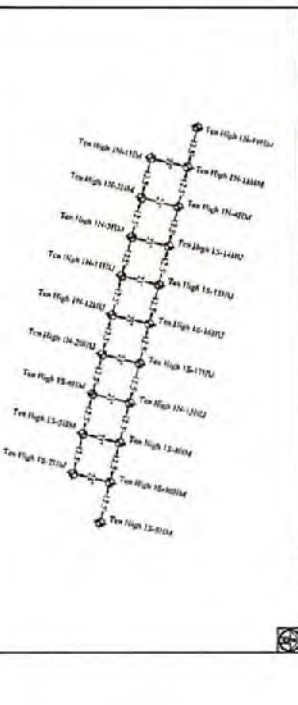
MAR 13 2018

WV Department of
Environmental Protection

Ten Hig

Site Design, C
Erosion and Sec
Tug Hi
Marst
Mear
Latitude
Longitude
Middle Fish

Exhibit



WV DEPT OF ENVIRONMENTAL AFFAIRS

| THE HIGH DISTRICT | THE HIGH DISTRICT | THE HIGH DISTRICT | THE HIGH DISTRICT | THE HIGH DISTRICT | THE HIGH DISTRICT |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| WV-S-NAD 83 N - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 |
| WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 | WV-S-NAD 83 E - 71814.24 |
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Project Contacts

Ted Hill Associates
 Jonathan White - Regulatory Analyst
 294-455-0000 FAX: 294-455-0010
 600 F. St. - Vinton, VA
 814-653-3300 FAX

Service and Expense
 Kenneth Kapp
 294-455-0000 FAX
 Mike F. Son
 294-455-0000 FAX

The Hill Operating, LLC
 280 Piedmonte Blvd
 280 Piedmonte Blvd, Ste 700
 Charlottesville, VA 22917

Environmental
 Wetland Delineation as required by 45 Code of Virginia, § 1-2-101
 Date: January 11, 2017

Technical Information
 This topographic information was derived from a field sketch and fieldwork by the Mountain Area Mapping Bureau, WV.

MBS UTILITY OF WEST VIRGINIA
 1-800-245-4-8848
 100 Virginia State Ave
 Martinsburg, WV 26150
 800-245-4884 FAX

811
 Members below, Call before you dig.

RECEIVED
 Office of Oil and Gas
 MAR 13 2018

WV Department of Environmental Protection

The Hill Operating will obtain an Erosion and Sedimentation Permit from 511-1099 from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities.

The WV Mason Website was consulted. Previous (Closing) mining activities per which the AOE

WVDEP Website also show that there are no active surface abandoned gas wells within the AOE

From the intersection of WV Rt 4 and OH Rt 7 near River Marketville, WV, Travel North on WV Rt 2 for 13.8 mi. Turn Right onto Co Rt 794 (Fish Creek). Follow Co Rt 794 for 26.5 mi. Turn Left onto Co Rt 217 (Egbert Ridge Rd). Follow Co Rt 217 for 3.7 mi. Turn Left to combine on Co Rt 201. Follow Co Rt 201 for 1.3 mi. Turn Right onto 535.12. (Egbert Ridge Co. Hwy) for 1.3 mi. Turn Right onto Co Rt 217. Follow Co Rt 217 for 0.9 mi. The site entrance will be on the Left (East) side of the road.

Apparatus Boundaries

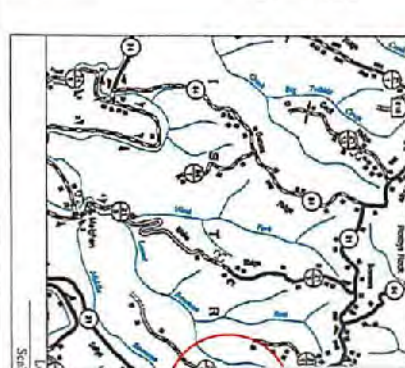
Site Location: (NAD 27)

| | | |
|---------|---------|-------------|
| North | East | Topographic |
| 4250.00 | 7400.00 | 10000.00 |
| 4250.00 | 7400.00 | 10000.00 |
| 4250.00 | 7400.00 | 10000.00 |
| 4250.00 | 7400.00 | 10000.00 |

Topographic Conditions

| | |
|------------------------------------------------------|----|
| Do not construct anywhere that there is a floodplain | NO |
| Do not construct anywhere that there is a floodplain | NO |
| Do not construct anywhere that there is a floodplain | NO |
| Do not construct anywhere that there is a floodplain | NO |
| Do not construct anywhere that there is a floodplain | NO |
| Do not construct anywhere that there is a floodplain | NO |

Project Map (inserted) for use: 511-1099
 Date: 1-11-17



Well Site

Instruction Plan, &
ment Control Plans
Operating

1 County

District

9,80696402°

0,68086081°

reek Watershed

As-Built

Pertinent Site Information
Ten High Well Site
Emergency Number: 304-845-1920
Meade District, Marshall County, WV
Watershed: Middle Fish Creek Watershed
Tug Hill Contact Number: 1-817-632-3400

WVDEP 00G
ACCEPTED AS-BUILT
1/9/2018



WV State Plane Coordinate System
NAD 83, SABS 83
Elevation Based on NAVD83
Elevation: 5999.075
GDA 1985 Projection

Property Owner Information - Ten High Well Site
Meade District - Meade County

| Owner | IN - Parcel | WVDEP Account # | System | WELL Diameter | WELL Depth | WELL Type |
|----------------|-------------|-----------------|--------|---------------|------------|-----------|
| Meade District | 724 | 592 | 1.2 | 1.2 | 6.6 | 1.1 |
| Meade District | 724 | 592 | 1.2 | 1.2 | 6.6 | 1.1 |

Adjacent Land

| Adjacent Owner | IN - Parcel | WVDEP Account # | System | WELL Diameter | WELL Depth | WELL Type |
|----------------|-------------|-----------------|--------|---------------|------------|-----------|
| Meade District | 723 | 592 | 1.2 | 1.2 | 6.6 | 1.1 |
| Meade District | 723 | 592 | 1.2 | 1.2 | 6.6 | 1.1 |

Identified Area

| Well ID | Well Depth | Well Type | Well Diameter | Well Status |
|---------|------------|-----------|---------------|-------------|
| 101 | 1.2 | 1.1 | 1.2 | Active |
| 102 | 1.2 | 1.1 | 1.2 | Active |

Ten High Well Site Quantities

| Well ID | Well Depth | Well Type | Well Diameter | Well Status |
|---------|------------|-----------|---------------|-------------|
| 101 | 1.2 | 1.1 | 1.2 | Active |
| 102 | 1.2 | 1.1 | 1.2 | Active |

gr/2017

EXISTING API NUMBERS

- 4705101934
- 4705101943
- 4705101944
- 4705101945
- 4705101964

Site Location (NAD 83)

| Station | Latitude (GDA) | Longitude (GDA) |
|----------|----------------|-----------------|
| Well 101 | 39.80696402 | -80.68086081 |
| Well 102 | 39.80696402 | -80.68086081 |



Well Location Restrictions
All Well construction complies with the following restrictions:
*10' from an existing well or developed spring pool for means of domestic intake.
*10' from an occupied dwelling or other structure that is less than 2,000 SF based on quality or they measured from the center of the pit.
*10' from the edge of a discharge or withdrawal, potential overflow, stand or unconfined flow, pond or reservoir.
*10' from the edge of a discharge or withdrawal, potential overflow, stand or unconfined flow, pond or reservoir.
*10' from a structure or ground water table on a public water right.
*10' from a structure or ground water table on a public water right.



This is to certify that the design and construction of the well site has been reviewed and approved by the Professional Engineer. The design and construction of the well site shall conform to the requirements of the West Virginia Code, Title 20, Chapter 22, Article 42. The Professional Engineer is not responsible for the design and construction of the well site or for the safety of the well site or for the safety of the well site or for the safety of the well site.

Zackery C. Shumaker
Professional Engineer
West Virginia
License No. 22214

| Sheet | Description |
|-------|---------------------------------------|
| 1 | Cover Sheet |
| 1A | Schedule of Quantities |
| 1A-N3 | Site Notes |
| 2 | Proposed Construction Site Conditions |
| 3 | Cleaning Exhibit |
| 4 | Overall Plan View |
| 5 | EAS Plan View |
| 6-7 | Top Key Exhibit |
| 8-10 | Plan View |
| 9-10 | Cross Sections - Well Pad |
| 11-12 | Cross Sections - Access Road |
| 13 | Overall Plan View |
| 14-D2 | Landowner Disturbed Area Exhibit |
| 15 | Site Reclamation |
| SI | Production Exhibit |
| SI-M3 | Erosion and Sediment Control Details |
| DI-D2 | Access Road Details |
| PI | Pad Details |

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly S. Shumaker
Professional Engineer
West Virginia

Cover Sheet

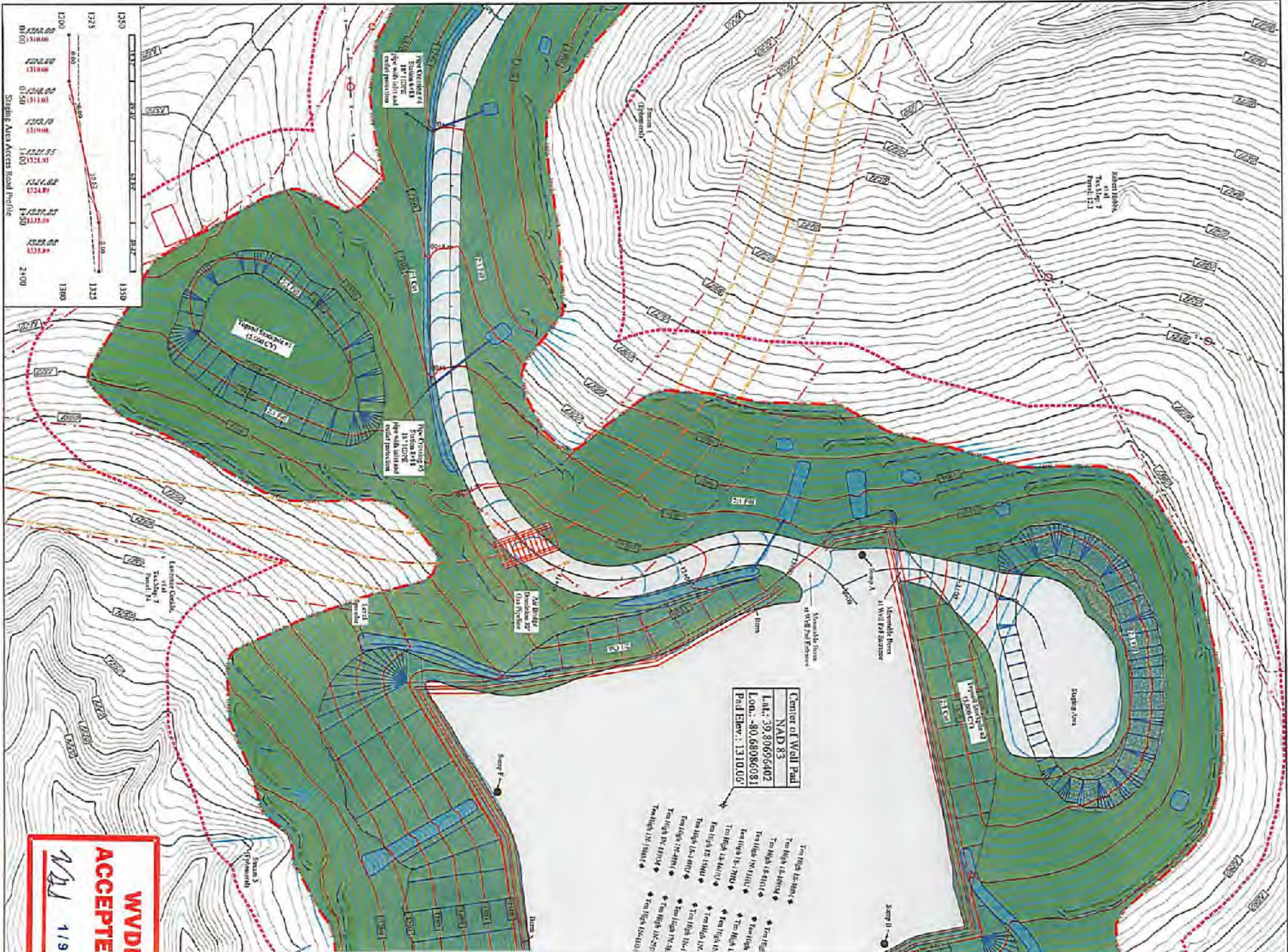
Ten High Well Site

Meade District
Marshall County, WV

Date: 02-17-2017
Revision: 12-06-2017

Revision: Design
As-Built

Date: 02/17/2017
Scale: As Shown
Designed By: ZS
File No:
Sheet 1 of 13

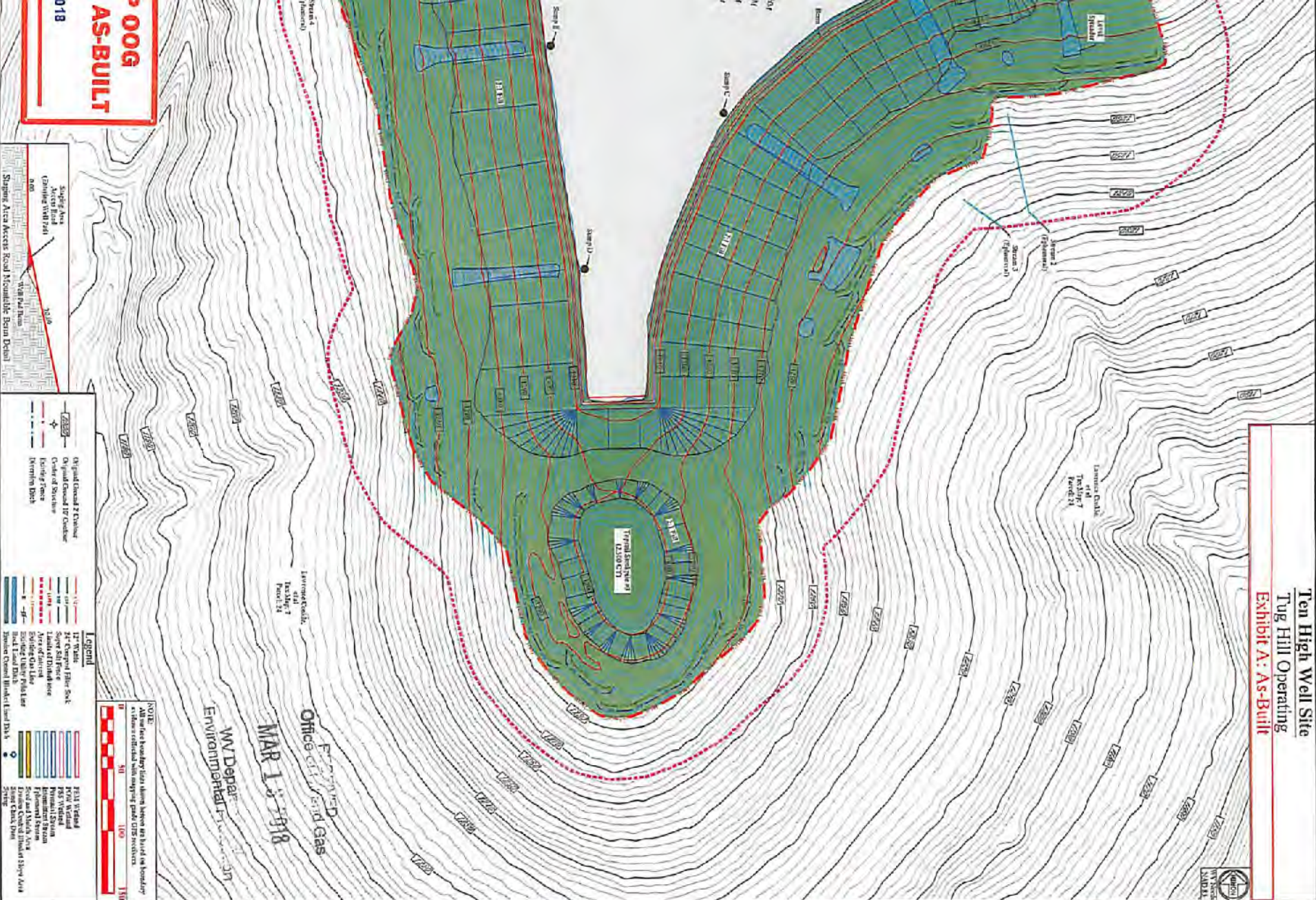


| Center of Well Pad | |
|---------------------|--|
| NAD 83 | |
| Lat.: 39.30656402 | |
| Long.: -90.68986081 | |
| Pad Elev.: 1310.00' | |

- Tie High 16-306
- Tie High 16-307
- Tie High 16-310
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- Tie High 16-348
- Tie High 16-349
- Tie High 16-350

WVDI
ACCEPTED
 1/21 1/9

Ten High Well Site
Tug Hill Operating
Exhibit A: As-Built



Legend

| | | | |
|--|---------------|--|--------------|
| | 10' Vertical | | 10' Vertical |
| | 20' Vertical | | 15' Vertical |
| | 30' Vertical | | 15' Vertical |
| | 40' Vertical | | 15' Vertical |
| | 50' Vertical | | 15' Vertical |
| | 60' Vertical | | 15' Vertical |
| | 70' Vertical | | 15' Vertical |
| | 80' Vertical | | 15' Vertical |
| | 90' Vertical | | 15' Vertical |
| | 100' Vertical | | 15' Vertical |
| | 110' Vertical | | 15' Vertical |
| | 120' Vertical | | 15' Vertical |
| | 130' Vertical | | 15' Vertical |
| | 140' Vertical | | 15' Vertical |
| | 150' Vertical | | 15' Vertical |
| | 160' Vertical | | 15' Vertical |
| | 170' Vertical | | 15' Vertical |
| | 180' Vertical | | 15' Vertical |
| | 190' Vertical | | 15' Vertical |
| | 200' Vertical | | 15' Vertical |

NOTE: All elevations are based on a mean sea level datum.

| | | | |
|--|-----------------------|--|--------------|
| | Optimized Footprint | | 10' Vertical |
| | Optimized 15' Contour | | 15' Vertical |
| | Center of Structure | | 15' Vertical |
| | Existing Fence | | 15' Vertical |
| | Property Bldg | | 15' Vertical |

Legend

| | | | |
|--|---------------|--|--------------|
| | 10' Vertical | | 15' Vertical |
| | 20' Vertical | | 15' Vertical |
| | 30' Vertical | | 15' Vertical |
| | 40' Vertical | | 15' Vertical |
| | 50' Vertical | | 15' Vertical |
| | 60' Vertical | | 15' Vertical |
| | 70' Vertical | | 15' Vertical |
| | 80' Vertical | | 15' Vertical |
| | 90' Vertical | | 15' Vertical |
| | 100' Vertical | | 15' Vertical |
| | 110' Vertical | | 15' Vertical |
| | 120' Vertical | | 15' Vertical |
| | 130' Vertical | | 15' Vertical |
| | 140' Vertical | | 15' Vertical |
| | 150' Vertical | | 15' Vertical |
| | 160' Vertical | | 15' Vertical |
| | 170' Vertical | | 15' Vertical |
| | 180' Vertical | | 15' Vertical |
| | 190' Vertical | | 15' Vertical |
| | 200' Vertical | | 15' Vertical |

Erosion and Sediment Control Plan
Ten High Well Site
Meade District
Marshall County, WV

Date: 02/17/2017
Scale: As Shown
Designed By: JS
Sheet 7 of 13

Kyle S. Spurgeon
Professional Engineer
No. 12133
West Virginia
03/09/2010



TUG HILL OPERATING

| Date | Revision |
|------------|----------|
| 02-17-2017 | Design |
| 02-06-2017 | As-Built |
| | |
| | |
| | |