



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

Friday, August 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 HILLROCK 9HM
47-051-02066-00-00

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

Operator's Well Number: HILLROCK 9HM
Farm Name: TERRY E. & DEBORAH SIMM
U.S. WELL NUMBER: 47-051-02066-00-00
Horizontal 6A New Drill
Date Issued: 8/17/2018

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.

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 Franklin New Martinsville
Operator ID County District Quadrangle

2) Operator's Well Number: Hillrock 9HM Well Pad Name: Simms

3) Farm Name/Surface Owner: Simms, Terry E. and Deborah Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1,219.50' Elevation, proposed post-construction: 1,219.50'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

Handwritten signature and date: 6/28/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6444' - 6495' thickness of 51' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,595'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 16,578'

11) Proposed Horizontal Leg Length: 9,613' ✓ *Handwritten initials*

12) Approximate Fresh Water Strata Depths: 70', 812' ✓

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater. Or determine using predrill tests, testing while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 2,167' ✓

15) Approximate Coal Seam Depths: Sewickly Coal - 706' and Pittsburgh Coal - 806' ✓

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: _____
Depth: _____
Seam: _____
Owner: _____

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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 | 13 3/8" | NEW | H40 | 48# | 920' | 920' ✓ | 989ft^3(CTS) |
| Coal | 13 3/8" | NEW | H40 | 48# | 920' | 920' | 989ft^3(CTS) |
| Intermediate | 9 5/8" | NEW | J55 | 36# | 2,800' | 2,800' ✓ | 933ft^3(CTS) |
| Production | 5 1/2" | NEW | P110 | 20# | 16,578' | 16,578' | 4230ft^3(CTS) |
| Tubing | 2 3/8" | NEW | N80 | 4.7# | | 7,007' | |
| Liners | | | | | | | |

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6/28/18

| 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 | 13 3/8" | 17 1/2" | .33 | 1,730 | 1,384 | SEE #24 | 1.2 |
| Coal | 13 3/8" | 17 1/2" | .33 | 1,730 | 1,384 | SEE#24 | 1.2 |
| Intermediate | 9 5/8" | 12 1/4" | .352 | 3,520 | 2,816 | SEE#24 | 1.19 |
| Production | 5 1/2" | 8 7/8_8 3/4 | .361 | 12,640 ✓ | 9,000 | SEE#24 | 1.17/1.19 |
| Tubing | 2 3/8" | | .19 | 11,200 | 8,960 | | |
| Liners | | | | | | | |

PACKERS

| | | | | |
|-------------|-----|--|--|--|
| Kind: | N/A | | | |
| Sizes: | N/A | | | |
| Depths Set: | N/A | | | |

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WW-6B
(10/14)

API NO. 47-051 - _____
OPERATOR WELL NO. Hillrock SHM
Well Pad Name: Simms

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. 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 24,032,500 lb proppant and 371,560 bbl of water. Max rate = 80 bpm; max psi = 9,000#. ✓

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 11.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 3.19 acres

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other 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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*Note: Attach additional sheets as needed.

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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 (05/24/2018) 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

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

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MA

Permit well - Hillrock 9HM

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

| 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 |
|------------|-------------------------------|-------------------------|----------------|--------------------------------|---|---|
| 4705101452 | Tug Hill Operating | 5584' TVD 11386' MD | Marcellus | Unknown | Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101468 | Tug Hill Operating | 6599' TVD 12685' MD | Marcellus | Unknown | Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101469 | Tug Hill Operating | 6631' TVD 12825' MD | Marcellus | Unknown | Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Marcellus horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705101731 | Tug Hill Operating | 11492' TVD 16804' MD | Point Pleasant | Unknown | Yes, existing Point Pleasant producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore | Producing Point Pleasant horizontal well. A field survey was conducted to locate this well and it was found producing at the location shown on the well plat. |
| 4705130506 | Perkins Carl D | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | Well was plugged 10/14/1975 |
| 4705170353 | Unknown | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | State records are incomplete |
| 4705170354 | Unknown | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | State records are incomplete |
| 4705130458 | Manufacturers Light & Heat | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | Well was plugged 10/17/1963 |
| 4705170356 | Unknown | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | State records are incomplete |
| 4705170357 | Unknown | Unknown | Unknown | Unknown | Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well. | State records are incomplete |

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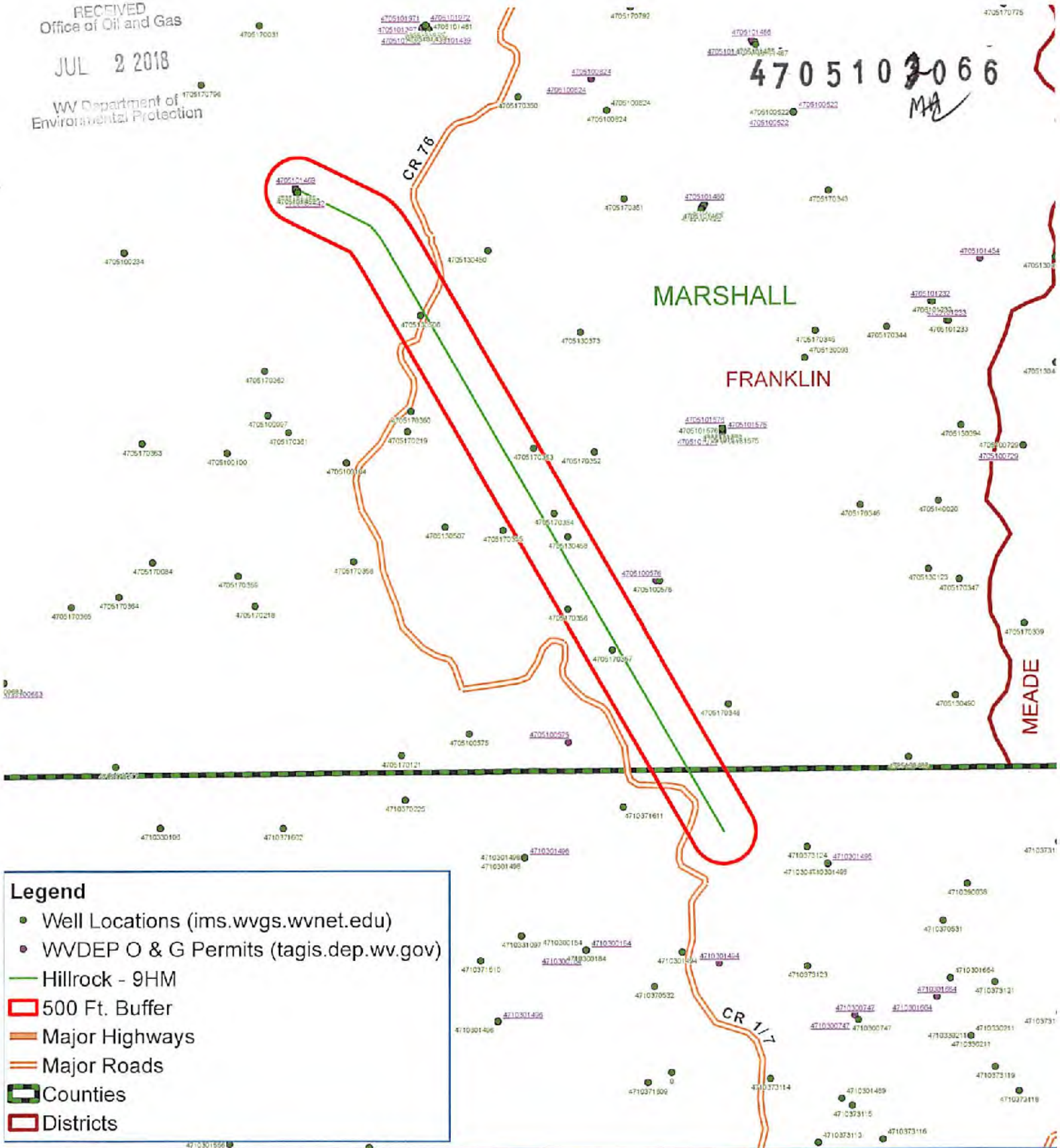
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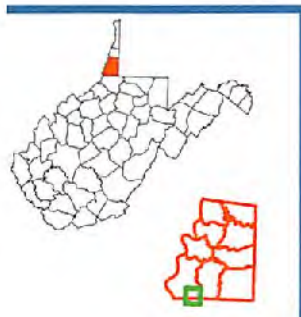
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Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Hillrock - 9HM
- 500 Ft. Buffer
- Major Highways
- Major Roads
- Counties
- Districts



Hillrock - 9HM Franklin District Marshall County, WV



Map Prepared by:
PS
LAND SERVICES

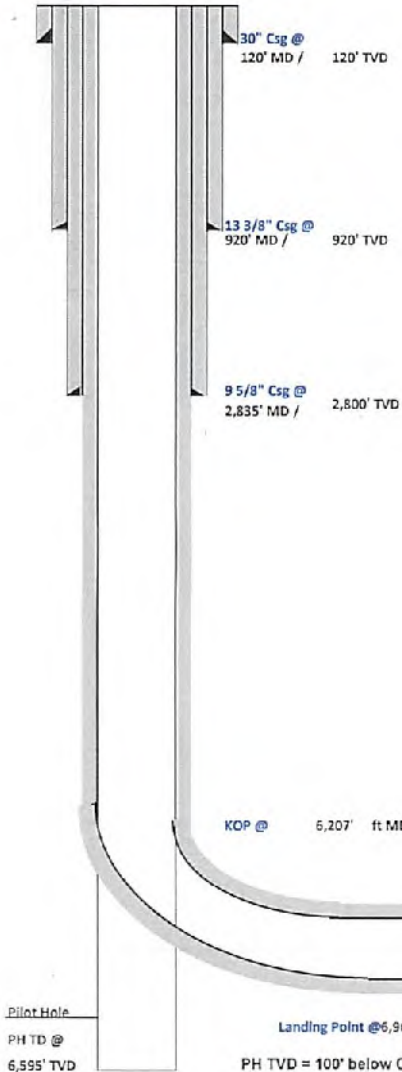


WELL NAME: Hillrock 9HM
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,219' **GL Elev:** 1,219'
TD: 15,578'
TH Latitude: 39.74603472
TH Longitude: -80.77026528
BH Latitude: 39.72044786
BH Longitude: -80.74820953

| FORMATION TOPS | |
|---------------------|-----------|
| Formation | Depth TVD |
| Deepest Fresh Water | 812 |
| Sewickley Coal | 706 |
| Pittsburgh Coal | 806 |
| Big Lime | 1610 |
| Weir | 1790 |
| Berea | 1897 |
| Gordon | 2018 |
| Rhinestreet | 3547 |
| Genesee/Burkett | 3779 |
| Tully | 3814 |
| Hamilton | 3832 |
| Marcellus | 6444 |
| Landing Depth | 6479 |
| Onondaga | 6495 |
| Pilot Hole Depth | 6595 |

| 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 | 17.5 | 13 3/8 | 920' | 920' | 54.5 | J55 | Surface |
| Intermediate 1 | 12 1/4 | 9 5/8 | 2,835' | 2,800' | 36 | J55 | Surface |
| Production | 8 7/8 x 8 3/4 | 5 1/2 | 15,578' | 6,630' | 20 | CYHP110 | Surface |

| CEMENT SUMMARY | | | | DRILLING DETAILS | |
|----------------|-------|-------|---------|------------------|---|
| | Sacks | Class | Density | Fluid Type | Centralizer Notes |
| Conductor | 338 | A | 15.6 | Air | None |
| Surface | 992 | A | 15.6 | Air | 3 Centralizers at equal distance |
| Intermediate 1 | 924 | A | 15 | Air | 1 Centralizer every other jt |
| Production | 3,730 | A | 14.5 | Air / SOBMs | 1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc |



JW 6/28/18

Pilot Hole
 PH TD @
 6,595' TVD

Landing Point @6,966' MD / 6,479' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 15,578' ft MD
 6,630 ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Hillrock 9HM

Casing

| | String | Grade | Bit Size | Depth (Measured) | Cement Fill Up |
|--------------|---------|---------|----------------|------------------|----------------|
| Conductor | 30" | BW | 36" | 120' | CTS |
| Surface | 13 3/8" | J55 | 17 1/2" | 920' | CTS |
| Intermediate | 9 5/8" | J55 | 12 1/4" | 2,835' | CTS |
| Production | 5 1/2" | CYHP110 | 8 7/8 x 8 3/4" | 16,578' | CTS |

Cement

| | |
|----------------|--|
| Conductor: | Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2 |
| Surface: | Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2 |
| Intermediate: | Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19 |
| Kick Off Plug: | Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug |
| 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 = 1.19 |

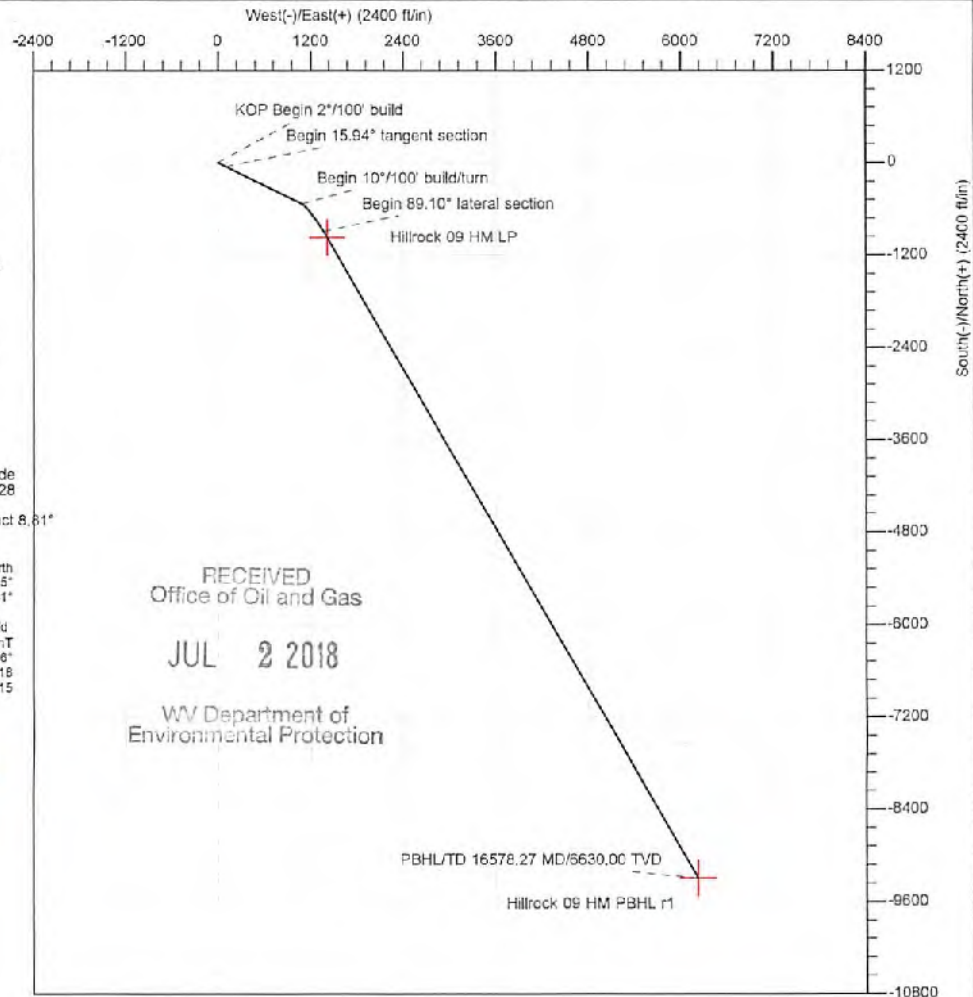
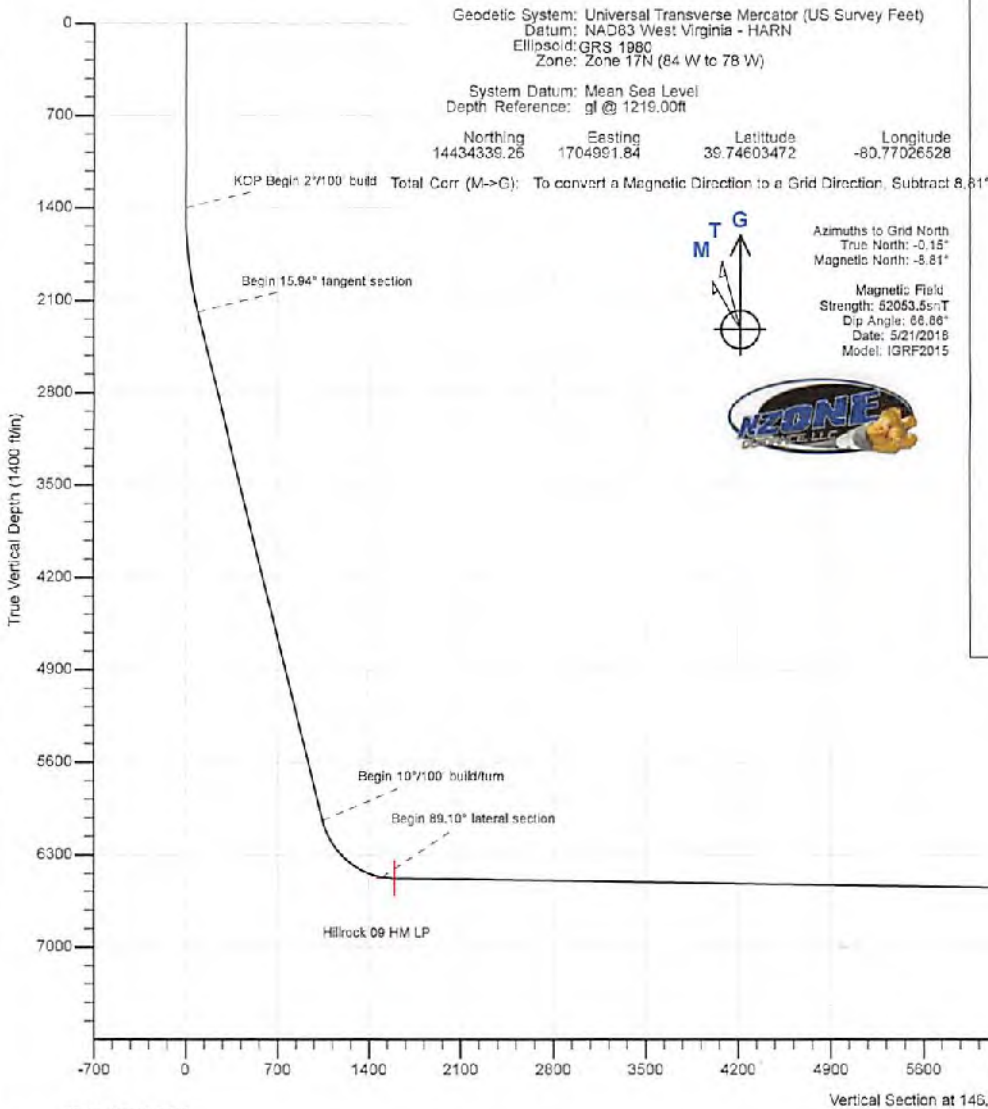
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Well: Hillrock 09 HM (i)
 Site: Hillrock/Simms
 Project: Marshall County, West Virginia.
 Design: rev1

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSec | Annotation |
|-----|----------|-------|--------|---------|----------|---------|-------|--------|---------|---------------------------------|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 1400.00 | 0.00 | 0.00 | 1400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP Begin 2°/100' build |
| 3 | 2196.95 | 15.94 | 116.22 | 2186.71 | -48.66 | 98.80 | 2.00 | 116.22 | 95.40 | Begin 15.94° tangent section |
| 4 | 6206.58 | 15.94 | 116.22 | 6042.19 | -535.17 | 1086.60 | 0.00 | 0.00 | 1049.18 | Begin 10°/100' build/turn |
| 5 | 6955.75 | 09.10 | 150.00 | 6479.00 | -976.45 | 1420.17 | 10.00 | 34.97 | 1601.44 | |
| 6 | 16578.27 | 09.10 | 150.00 | 6630.00 | -9300.15 | 6225.75 | 0.00 | 0.00 | 1191.65 | PBHL/TD 16578.27 MD/6630.00 TVD |



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Planning Report - Geographic

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|------------------|---------------------------------|-------------------------------------|-------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Hillrock 09 HM (i) |
| Company: | Tug Hill Operating LLC | TVD Reference: | gl @ 1219.00ft |
| Project: | Marshall County, West Virginia. | MD Reference: | gl @ 1219.00ft |
| Site: | Hillrock/Simms | North Reference: | Grid |
| Well: | Hillrock 09 HM (i) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| | | | |
|--------------------|--|----------------------|----------------|
| 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 | Hillrock/Simms | | | | |
| Site Position: | | Northing: | 14,434,279.29 usft | Latitude: | 39.74587001 |
| From: | Lat/Long | Easting: | 1,704,992.60 usft | Longitude: | -80.77026312 |
| Position Uncertainty: | 0.00 ft | Slot Radius: | 13-3/16 " | Grid Convergence: | 0.15 " |

| | | | | | | |
|-----------------------------|--------------------|---------|----------------------------|--------------------|----------------------|--------------|
| Well | Hillrock 09 HM (i) | | | | | |
| Well Position | +N/-S | 0.00 ft | Northing: | 14,434,339.26 usft | Latitude: | 39.74603472 |
| | +E/-W | 0.00 ft | Easting: | 1,704,991.84 usft | Longitude: | -80.77026528 |
| Position Uncertainty | | 0.00 ft | Wellhead Elevation: | | Ground Level: | 1,219.00 ft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | Original Hole | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 5/21/2018 | -8.66 | 66.88 | 52,053.53143001 |

| | | | | |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|
| Design | rev1 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PLAN | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
| | 0.00 | 0.00 | 0.00 | 146.20 |

| | | | | |
|---------------------------------|----------------------|--------------------------------|------------------|----------------|
| Plan Survey Tool Program | Date | 6/21/2018 | | |
| Depth From (ft) | Depth To (ft) | Survey (Wellbore) | Tool Name | Remarks |
| 1 | 0.00 | 16,578.27 rev1 (Original Hole) | MWD | MWD - Standard |

| Plan Sections | | | | | | | | | | |
|----------------------|-----------------|-------------|---------------------|------------|------------|-----------------------|----------------------|---------------------|---------|---------------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2,196.95 | 15.94 | 116.22 | 2,188.71 | -48.66 | 98.80 | 2.00 | 2.00 | 0.00 | 116.22 | |
| 6,206.58 | 15.94 | 116.22 | 6,042.19 | -535.17 | 1,086.60 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,965.75 | 89.10 | 150.00 | 6,479.00 | -976.45 | 1,420.17 | 10.00 | 9.64 | 4.45 | 34.97 | Hillrock 09 HM LP |
| 16,578.27 | 89.10 | 150.00 | 6,630.00 | -9,300.16 | 6,225.75 | 0.00 | 0.00 | 0.00 | 0.00 | Hillrock 09 HM PBHL |



Planning Report - Geographic

470510-0066 RECEIVED
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| | | | | |
|------------------|---------------------------------|-------------------------------------|-------------------------|--|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Hillrock 09 HM (i) | WV Department of Environmental Protection |
| Company: | Tug Hill Operating LLC | TVD Reference: | gl @ 1219.00ft | |
| Project: | Marshall County, West Virginia. | MD Reference: | gl @ 1219.00ft | |
| Site: | Hillrock/Simms | North Reference: | Grid | |
| Well: | Hillrock 09 HM (i) | Survey Calculation Method: | Minimum Curvature | |
| Wellbore: | Original Hole | | | |
| Design: | rev1 | | | |

| Planned Survey | | | | | | | | | | |
|-------------------------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 1,300.00 | 0.00 | 0.00 | 1,300.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| 1,400.00 | 0.00 | 0.00 | 1,400.00 | 0.00 | 0.00 | 14,434,339.26 | 1,704,991.84 | 39.74603472 | -80.77026528 | |
| KOP Begin 2"/100' build | | | | | | | | | | |
| 1,500.00 | 2.00 | 116.22 | 1,499.98 | -0.77 | 1.57 | 14,434,338.49 | 1,704,993.40 | 39.74603259 | -80.77025972 | |
| 1,600.00 | 4.00 | 116.22 | 1,599.84 | -3.08 | 6.26 | 14,434,336.18 | 1,704,998.10 | 39.74602621 | -80.77024304 | |
| 1,700.00 | 6.00 | 116.22 | 1,699.46 | -6.93 | 14.08 | 14,434,332.33 | 1,705,005.92 | 39.74601558 | -80.77021526 | |
| 1,800.00 | 8.00 | 116.22 | 1,798.71 | -12.32 | 25.01 | 14,434,326.95 | 1,705,016.85 | 39.74600071 | -80.77017641 | |
| 1,900.00 | 10.00 | 116.22 | 1,897.47 | -19.23 | 39.04 | 14,434,320.03 | 1,705,030.88 | 39.74598163 | -80.77012655 | |
| 2,000.00 | 12.00 | 116.22 | 1,995.63 | -27.66 | 56.16 | 14,434,311.60 | 1,705,048.00 | 39.74595636 | -80.77008573 | |
| 2,100.00 | 14.00 | 116.22 | 2,093.06 | -37.60 | 76.34 | 14,434,301.66 | 1,705,068.18 | 39.74593093 | -80.76999404 | |
| 2,186.95 | 15.94 | 116.22 | 2,186.71 | -48.66 | 98.80 | 14,434,290.60 | 1,705,090.64 | 39.74590036 | -80.76991422 | |
| 2,196.97 | 15.94 | 116.22 | 2,186.73 | -48.67 | 98.81 | 14,434,290.60 | 1,705,090.65 | 39.74590038 | -80.76991420 | |
| Begin 15.94° tangent section | | | | | | | | | | |
| 2,200.00 | 15.94 | 116.22 | 2,189.85 | -49.03 | 99.56 | 14,434,290.23 | 1,705,091.39 | 39.74589936 | -80.76991155 | |
| 2,300.00 | 15.94 | 116.22 | 2,285.80 | -61.17 | 124.19 | 14,434,278.10 | 1,705,116.03 | 39.74586586 | -80.76982401 | |
| 2,400.00 | 15.94 | 116.22 | 2,381.96 | -73.30 | 148.83 | 14,434,285.96 | 1,705,140.86 | 39.74583237 | -80.76973649 | |
| 2,500.01 | 15.94 | 116.22 | 2,478.11 | -85.43 | 173.46 | 14,434,253.03 | 1,705,165.30 | 39.74579887 | -80.76964895 | |
| 2,600.01 | 15.94 | 116.22 | 2,574.27 | -97.57 | 198.10 | 14,434,241.70 | 1,705,189.94 | 39.74576538 | -80.76956142 | |
| 2,700.01 | 15.94 | 116.22 | 2,670.43 | -109.70 | 222.73 | 14,434,229.56 | 1,705,214.57 | 39.74573188 | -80.76947389 | |
| 2,800.01 | 15.94 | 116.22 | 2,766.58 | -121.83 | 247.37 | 14,434,217.43 | 1,705,239.21 | 39.74569838 | -80.76938635 | |
| 2,900.01 | 15.94 | 116.22 | 2,862.74 | -133.97 | 272.01 | 14,434,205.30 | 1,705,263.84 | 39.74566489 | -80.76929882 | |
| 3,000.01 | 15.94 | 116.22 | 2,958.89 | -146.10 | 296.64 | 14,434,193.16 | 1,705,288.48 | 39.74563139 | -80.76921129 | |
| 3,100.01 | 15.94 | 116.22 | 3,055.05 | -158.24 | 321.28 | 14,434,181.03 | 1,705,313.11 | 39.74559789 | -80.76912376 | |
| 3,200.01 | 15.94 | 116.22 | 3,151.20 | -170.37 | 345.91 | 14,434,168.90 | 1,705,337.75 | 39.74556440 | -80.76903623 | |
| 3,300.01 | 15.94 | 116.22 | 3,247.36 | -182.50 | 370.55 | 14,434,156.76 | 1,705,362.38 | 39.74553090 | -80.76894869 | |
| 3,400.01 | 15.94 | 116.22 | 3,343.52 | -194.64 | 395.18 | 14,434,144.63 | 1,705,387.02 | 39.74549740 | -80.76886116 | |
| 3,500.01 | 15.94 | 116.22 | 3,439.67 | -206.77 | 419.82 | 14,434,132.49 | 1,705,411.65 | 39.74546391 | -80.76877363 | |
| 3,600.01 | 15.94 | 116.22 | 3,535.83 | -218.90 | 444.45 | 14,434,120.36 | 1,705,436.29 | 39.74543041 | -80.76868610 | |
| 3,700.01 | 15.94 | 116.22 | 3,631.98 | -231.04 | 469.09 | 14,434,108.23 | 1,705,460.93 | 39.74539691 | -80.76859857 | |
| 3,800.01 | 15.94 | 116.22 | 3,728.14 | -243.17 | 493.73 | 14,434,096.09 | 1,705,485.56 | 39.74536342 | -80.76851104 | |
| 3,900.01 | 15.94 | 116.22 | 3,824.29 | -255.30 | 518.36 | 14,434,083.96 | 1,705,510.20 | 39.74532992 | -80.76842351 | |
| 4,000.01 | 15.94 | 116.22 | 3,920.45 | -267.44 | 543.00 | 14,434,071.83 | 1,705,534.83 | 39.74529642 | -80.76833598 | |
| 4,100.01 | 15.94 | 116.22 | 4,016.60 | -279.57 | 567.63 | 14,434,059.69 | 1,705,559.47 | 39.74526293 | -80.76824845 | |
| 4,200.01 | 15.94 | 116.22 | 4,112.76 | -291.70 | 592.27 | 14,434,047.56 | 1,705,584.10 | 39.74522943 | -80.76816092 | |
| 4,300.01 | 15.94 | 116.22 | 4,208.92 | -303.84 | 616.90 | 14,434,035.43 | 1,705,608.74 | 39.74519593 | -80.76807338 | |
| 4,400.01 | 15.94 | 116.22 | 4,305.07 | -315.97 | 641.54 | 14,434,023.29 | 1,705,633.37 | 39.74516244 | -80.76798585 | |
| 4,500.01 | 15.94 | 116.22 | 4,401.23 | -328.10 | 666.17 | 14,434,011.16 | 1,705,658.01 | 39.74512894 | -80.76789832 | |
| 4,600.01 | 15.94 | 116.22 | 4,497.38 | -340.24 | 690.81 | 14,433,999.03 | 1,705,682.65 | 39.74509544 | -80.76781079 | |
| 4,700.01 | 15.94 | 116.22 | 4,593.54 | -352.37 | 715.45 | 14,433,986.89 | 1,705,707.28 | 39.74506194 | -80.76772326 | |
| 4,800.01 | 15.94 | 116.22 | 4,689.69 | -364.51 | 740.08 | 14,433,974.76 | 1,705,731.92 | 39.74502845 | -80.76763573 | |
| 4,900.01 | 15.94 | 116.22 | 4,785.85 | -376.64 | 764.72 | 14,433,962.63 | 1,705,756.55 | 39.74499495 | -80.76754820 | |



Planning Report - Geographic

4705103066

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WV Department of
Environmental Protection

Database: DB_Jul2216dt_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia.
Site: Hillrock/Simms
Well: Hillrock 09 HM (i)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Hillrock 09 HM (i)
TVD Reference: gl @ 1219.00ft
MD Reference: gl @ 1219.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|-------------------------------------|--------------------|----------------|---------------------------|---------------|---------------|---------------------------|--------------------------|-------------|--------------|
| 5,000.01 | 15.94 | 116.22 | 4,882.01 | -388.77 | 789.35 | 14,433,950.49 | 1,705,781.19 | 39.74496145 | -80.76746067 |
| 5,100.01 | 15.94 | 116.22 | 4,978.16 | -400.91 | 813.99 | 14,433,938.36 | 1,705,805.82 | 39.74492795 | -80.76737314 |
| 5,200.01 | 15.94 | 116.22 | 5,074.32 | -413.04 | 838.82 | 14,433,926.23 | 1,705,830.46 | 39.74489445 | -80.76728561 |
| 5,300.01 | 15.94 | 116.22 | 5,170.47 | -425.17 | 863.26 | 14,433,914.09 | 1,705,855.09 | 39.74486096 | -80.76719808 |
| 5,400.01 | 15.94 | 116.22 | 5,266.63 | -437.31 | 887.89 | 14,433,901.96 | 1,705,879.73 | 39.74482746 | -80.76711055 |
| 5,500.01 | 15.94 | 116.22 | 5,362.78 | -449.44 | 912.53 | 14,433,889.82 | 1,705,904.37 | 39.74479396 | -80.76702302 |
| 5,600.01 | 15.94 | 116.22 | 5,458.94 | -461.57 | 937.17 | 14,433,877.69 | 1,705,929.00 | 39.74476046 | -80.76693549 |
| 5,700.01 | 15.94 | 116.22 | 5,555.10 | -473.71 | 961.80 | 14,433,865.56 | 1,705,953.64 | 39.74472696 | -80.76684796 |
| 5,800.01 | 15.94 | 116.22 | 5,651.25 | -485.84 | 986.44 | 14,433,853.42 | 1,705,978.27 | 39.74469347 | -80.76676043 |
| 5,900.01 | 15.94 | 116.22 | 5,747.41 | -497.97 | 1,011.07 | 14,433,841.29 | 1,706,002.91 | 39.74465997 | -80.76667291 |
| 6,000.01 | 15.94 | 116.22 | 5,843.56 | -510.11 | 1,035.71 | 14,433,829.16 | 1,706,027.54 | 39.74462647 | -80.76658538 |
| 6,100.01 | 15.94 | 116.22 | 5,939.72 | -522.24 | 1,060.34 | 14,433,817.02 | 1,706,052.18 | 39.74459297 | -80.76649785 |
| 6,200.01 | 15.94 | 116.22 | 6,035.87 | -534.37 | 1,084.98 | 14,433,804.89 | 1,706,076.81 | 39.74455947 | -80.76641032 |
| 6,206.58 | 15.94 | 116.22 | 6,042.18 | -535.17 | 1,088.80 | 14,433,804.09 | 1,706,078.43 | 39.74455727 | -80.76640457 |
| 6,206.59 | 15.94 | 116.22 | 6,042.20 | -535.17 | 1,088.80 | 14,433,804.09 | 1,706,078.43 | 39.74455727 | -80.76640456 |
| Begin 10°/100' build/turn | | | | | | | | | |
| 6,300.01 | 24.18 | 129.35 | 6,129.92 | -553.01 | 1,112.96 | 14,433,786.25 | 1,706,104.80 | 39.74450809 | -80.76631095 |
| 6,400.01 | 33.62 | 136.27 | 6,217.39 | -586.09 | 1,148.02 | 14,433,753.18 | 1,706,139.86 | 39.74441700 | -80.76618652 |
| 6,500.01 | 43.29 | 140.40 | 6,295.62 | -632.63 | 1,189.11 | 14,433,706.64 | 1,706,180.95 | 39.74428889 | -80.76604077 |
| 6,600.01 | 53.06 | 143.26 | 6,362.24 | -691.22 | 1,234.99 | 14,433,648.05 | 1,706,226.82 | 39.74412766 | -80.76587812 |
| 6,700.01 | 62.88 | 145.46 | 6,415.21 | -760.09 | 1,284.25 | 14,433,579.18 | 1,706,276.08 | 39.74393819 | -80.76570351 |
| 6,800.01 | 72.74 | 147.31 | 6,452.93 | -837.12 | 1,335.40 | 14,433,502.14 | 1,706,327.24 | 39.74372624 | -80.76552225 |
| 6,865.75 | 79.23 | 148.41 | 6,468.84 | -891.10 | 1,369.31 | 14,433,448.17 | 1,706,361.14 | 39.74357778 | -80.76540213 |
| Begin 89.10° lateral section | | | | | | | | | |
| 6,900.01 | 82.61 | 148.96 | 6,474.25 | -920.00 | 1,386.89 | 14,433,419.26 | 1,706,378.73 | 39.74349827 | -80.76533985 |
| 6,965.75 | 89.10 | 150.00 | 6,479.00 | -976.45 | 1,420.17 | 14,433,362.82 | 1,706,412.00 | 39.74334300 | -80.76522200 |
| 7,000.01 | 89.10 | 150.00 | 6,479.54 | -1,006.12 | 1,437.30 | 14,433,333.14 | 1,706,429.13 | 39.74328139 | -80.76516134 |
| 7,100.01 | 89.10 | 150.00 | 6,481.11 | -1,092.71 | 1,487.29 | 14,433,246.55 | 1,706,479.12 | 39.74302322 | -80.76498430 |
| 7,200.01 | 89.10 | 150.00 | 6,482.68 | -1,179.31 | 1,537.28 | 14,433,159.96 | 1,706,529.12 | 39.74278508 | -80.76480726 |
| 7,300.01 | 89.10 | 150.00 | 6,484.25 | -1,265.90 | 1,587.28 | 14,433,073.37 | 1,706,579.11 | 39.74254689 | -80.76463022 |
| 7,400.01 | 89.10 | 150.00 | 6,485.82 | -1,352.49 | 1,637.27 | 14,432,986.77 | 1,706,629.10 | 39.74230872 | -80.76445318 |
| 7,500.02 | 89.10 | 150.00 | 6,487.39 | -1,439.08 | 1,687.26 | 14,432,900.18 | 1,706,679.10 | 39.74207055 | -80.76427615 |
| 7,600.02 | 89.10 | 150.00 | 6,488.96 | -1,525.68 | 1,737.26 | 14,432,813.59 | 1,706,729.09 | 39.74183238 | -80.76409911 |
| 7,700.02 | 89.10 | 150.00 | 6,490.53 | -1,612.27 | 1,787.25 | 14,432,727.00 | 1,706,779.08 | 39.74159421 | -80.76392208 |
| 7,800.02 | 89.10 | 150.00 | 6,492.11 | -1,698.86 | 1,837.24 | 14,432,640.41 | 1,706,829.07 | 39.74135604 | -80.76374505 |
| 7,900.02 | 89.10 | 150.00 | 6,493.68 | -1,785.45 | 1,887.23 | 14,432,553.81 | 1,706,879.07 | 39.74111787 | -80.76356802 |
| 8,000.02 | 89.10 | 150.00 | 6,495.25 | -1,872.05 | 1,937.23 | 14,432,467.22 | 1,706,929.06 | 39.74087970 | -80.76339099 |
| 8,100.02 | 89.10 | 150.00 | 6,496.82 | -1,958.64 | 1,987.22 | 14,432,380.63 | 1,706,979.05 | 39.74064153 | -80.76321396 |
| 8,200.02 | 89.10 | 150.00 | 6,498.39 | -2,045.23 | 2,037.21 | 14,432,294.04 | 1,707,029.05 | 39.74040336 | -80.76303693 |
| 8,300.02 | 89.10 | 150.00 | 6,499.96 | -2,131.82 | 2,087.21 | 14,432,207.44 | 1,707,079.04 | 39.74016519 | -80.76285991 |
| 8,400.02 | 89.10 | 150.00 | 6,501.53 | -2,218.42 | 2,137.20 | 14,432,120.85 | 1,707,129.03 | 39.73992702 | -80.76268288 |
| 8,500.02 | 89.10 | 150.00 | 6,503.10 | -2,305.01 | 2,187.19 | 14,432,034.26 | 1,707,179.03 | 39.73968885 | -80.76250586 |
| 8,600.02 | 89.10 | 150.00 | 6,504.67 | -2,391.60 | 2,237.19 | 14,431,947.67 | 1,707,229.02 | 39.73945067 | -80.76232884 |
| 8,700.02 | 89.10 | 150.00 | 6,506.24 | -2,478.19 | 2,287.18 | 14,431,861.07 | 1,707,279.01 | 39.73921250 | -80.76215182 |
| 8,800.02 | 89.10 | 150.00 | 6,507.81 | -2,564.79 | 2,337.17 | 14,431,774.48 | 1,707,329.00 | 39.73897433 | -80.76197480 |
| 8,900.02 | 89.10 | 150.00 | 6,509.38 | -2,651.38 | 2,387.17 | 14,431,687.89 | 1,707,379.00 | 39.73873616 | -80.76179778 |
| 9,000.02 | 89.10 | 150.00 | 6,510.96 | -2,737.97 | 2,437.16 | 14,431,601.30 | 1,707,428.99 | 39.73849798 | -80.76162076 |
| 9,100.02 | 89.10 | 150.00 | 6,512.53 | -2,824.56 | 2,487.15 | 14,431,514.70 | 1,707,478.98 | 39.73825981 | -80.76144375 |
| 9,200.02 | 89.10 | 150.00 | 6,514.10 | -2,911.16 | 2,537.14 | 14,431,428.11 | 1,707,528.98 | 39.73802164 | -80.76126673 |
| 9,300.02 | 89.10 | 150.00 | 6,515.67 | -2,997.75 | 2,587.14 | 14,431,341.52 | 1,707,578.97 | 39.73778346 | -80.76108972 |
| 9,400.02 | 89.10 | 150.00 | 6,517.24 | -3,084.34 | 2,637.13 | 14,431,254.93 | 1,707,628.96 | 39.73754529 | -80.76091271 |
| 9,500.02 | 89.10 | 150.00 | 6,518.81 | -3,170.93 | 2,687.12 | 14,431,168.34 | 1,707,678.96 | 39.73730711 | -80.76073570 |
| 9,600.02 | 89.10 | 150.00 | 6,520.38 | -3,257.53 | 2,737.12 | 14,431,081.74 | 1,707,728.95 | 39.73706894 | -80.76055869 |
| 9,700.02 | 89.10 | 150.00 | 6,521.95 | -3,344.12 | 2,787.11 | 14,430,995.15 | 1,707,778.94 | 39.73683076 | -80.76038168 |



Planning Report - Geographic

4705103066
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JUL 2 2018

WV Department of
 Environmental Protection

| | | | |
|------------------|---------------------------------|-------------------------------------|-------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Hillrock 09 HM (i) |
| Company: | Tug Hill Operating LLC | TVD Reference: | gl @ 1219.00ft |
| Project: | Marshall County, West Virginia. | MD Reference: | gl @ 1219.00ft |
| Site: | Hillrock/Simms | North Reference: | Grid |
| Well: | Hillrock 09 HM (i) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Planned Survey | | | | | | | | | | |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|--|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude | |
| 9,800.02 | 89.10 | 150.00 | 6,523.52 | -3,430.71 | 2,837.10 | 14,430,908.56 | 1,707,828.93 | 39.73859259 | -80.76020487 | |
| 9,900.02 | 89.10 | 150.00 | 6,525.09 | -3,517.30 | 2,887.10 | 14,430,821.97 | 1,707,878.93 | 39.73635441 | -80.76002766 | |
| 10,000.02 | 89.10 | 150.00 | 6,526.66 | -3,603.90 | 2,937.09 | 14,430,735.37 | 1,707,928.92 | 39.73611624 | -80.75985086 | |
| 10,100.02 | 89.10 | 150.00 | 6,528.24 | -3,690.49 | 2,987.08 | 14,430,648.78 | 1,707,978.91 | 39.73587806 | -80.75967366 | |
| 10,200.02 | 89.10 | 150.00 | 6,529.81 | -3,777.08 | 3,037.08 | 14,430,562.19 | 1,708,028.91 | 39.73563988 | -80.75949685 | |
| 10,300.02 | 89.10 | 150.00 | 6,531.38 | -3,863.68 | 3,087.07 | 14,430,475.60 | 1,708,078.90 | 39.73540171 | -80.75931965 | |
| 10,400.02 | 89.10 | 150.00 | 6,532.95 | -3,950.27 | 3,137.06 | 14,430,389.00 | 1,708,128.89 | 39.73516353 | -80.75914285 | |
| 10,500.02 | 89.10 | 150.00 | 6,534.52 | -4,036.86 | 3,187.05 | 14,430,302.41 | 1,708,178.88 | 39.73492535 | -80.75896565 | |
| 10,600.02 | 89.10 | 150.00 | 6,536.09 | -4,123.45 | 3,237.05 | 14,430,215.82 | 1,708,228.88 | 39.73468718 | -80.75878866 | |
| 10,700.02 | 89.10 | 150.00 | 6,537.66 | -4,210.05 | 3,287.04 | 14,430,129.23 | 1,708,278.87 | 39.73444900 | -80.75861166 | |
| 10,800.02 | 89.10 | 150.00 | 6,539.23 | -4,296.64 | 3,337.03 | 14,430,042.63 | 1,708,328.86 | 39.73421082 | -80.75843466 | |
| 10,900.02 | 89.10 | 150.00 | 6,540.80 | -4,383.23 | 3,387.03 | 14,429,956.04 | 1,708,378.86 | 39.73397264 | -80.75825767 | |
| 11,000.02 | 89.10 | 150.00 | 6,542.37 | -4,469.82 | 3,437.02 | 14,429,869.45 | 1,708,428.85 | 39.73373446 | -80.75808068 | |
| 11,100.02 | 89.10 | 150.00 | 6,543.94 | -4,556.42 | 3,487.01 | 14,429,782.86 | 1,708,478.84 | 39.73349628 | -80.75790369 | |
| 11,200.02 | 89.10 | 150.00 | 6,545.51 | -4,643.01 | 3,537.01 | 14,429,696.27 | 1,708,528.84 | 39.73325810 | -80.75772670 | |
| 11,300.02 | 89.10 | 150.00 | 6,547.09 | -4,729.60 | 3,587.00 | 14,429,609.67 | 1,708,578.83 | 39.73301993 | -80.75754971 | |
| 11,400.02 | 89.10 | 150.00 | 6,548.66 | -4,816.19 | 3,636.99 | 14,429,523.08 | 1,708,628.82 | 39.73278175 | -80.75737272 | |
| 11,500.02 | 89.10 | 150.00 | 6,550.23 | -4,902.79 | 3,686.98 | 14,429,436.49 | 1,708,678.81 | 39.73254357 | -80.75719573 | |
| 11,600.02 | 89.10 | 150.00 | 6,551.80 | -4,989.38 | 3,736.98 | 14,429,349.90 | 1,708,728.81 | 39.73230539 | -80.75701875 | |
| 11,700.02 | 89.10 | 150.00 | 6,553.37 | -5,075.97 | 3,786.97 | 14,429,263.30 | 1,708,778.80 | 39.73206720 | -80.75684176 | |
| 11,800.02 | 89.10 | 150.00 | 6,554.94 | -5,162.56 | 3,836.96 | 14,429,176.71 | 1,708,828.79 | 39.73182902 | -80.75666478 | |
| 11,900.02 | 89.10 | 150.00 | 6,556.51 | -5,249.16 | 3,886.96 | 14,429,090.12 | 1,708,878.79 | 39.73159084 | -80.75648780 | |
| 12,000.02 | 89.10 | 150.00 | 6,558.08 | -5,335.75 | 3,936.95 | 14,429,003.53 | 1,708,928.78 | 39.73135266 | -80.75631082 | |
| 12,100.02 | 89.10 | 150.00 | 6,559.65 | -5,422.34 | 3,986.94 | 14,428,916.93 | 1,708,978.77 | 39.73111448 | -80.75613384 | |
| 12,200.02 | 89.10 | 150.00 | 6,561.22 | -5,508.93 | 4,036.94 | 14,428,830.34 | 1,709,028.77 | 39.73087630 | -80.75595686 | |
| 12,300.02 | 89.10 | 150.00 | 6,562.79 | -5,595.53 | 4,086.93 | 14,428,743.75 | 1,709,078.76 | 39.73063812 | -80.75577988 | |
| 12,400.03 | 89.10 | 150.00 | 6,564.37 | -5,682.12 | 4,136.92 | 14,428,657.16 | 1,709,128.75 | 39.73039993 | -80.75560291 | |
| 12,500.03 | 89.10 | 150.00 | 6,565.94 | -5,768.71 | 4,186.92 | 14,428,570.56 | 1,709,178.74 | 39.73016175 | -80.75542593 | |
| 12,600.03 | 89.10 | 150.00 | 6,567.51 | -5,855.30 | 4,236.91 | 14,428,483.97 | 1,709,228.74 | 39.72992357 | -80.75524896 | |
| 12,700.03 | 89.10 | 150.00 | 6,569.08 | -5,941.90 | 4,286.90 | 14,428,397.38 | 1,709,278.73 | 39.72968538 | -80.75507199 | |
| 12,800.03 | 89.10 | 150.00 | 6,570.65 | -6,028.49 | 4,336.89 | 14,428,310.79 | 1,709,328.72 | 39.72944720 | -80.75489502 | |
| 12,900.03 | 89.10 | 150.00 | 6,572.22 | -6,115.08 | 4,386.89 | 14,428,224.19 | 1,709,378.72 | 39.72920902 | -80.75471805 | |
| 13,000.03 | 89.10 | 150.00 | 6,573.79 | -6,201.67 | 4,436.88 | 14,428,137.60 | 1,709,428.71 | 39.72897083 | -80.75454108 | |
| 13,100.03 | 89.10 | 150.00 | 6,575.36 | -6,288.27 | 4,486.87 | 14,428,051.01 | 1,709,478.70 | 39.72873265 | -80.75436411 | |
| 13,200.03 | 89.10 | 150.00 | 6,576.93 | -6,374.86 | 4,536.87 | 14,427,964.42 | 1,709,528.69 | 39.72849446 | -80.75418714 | |
| 13,300.03 | 89.10 | 150.00 | 6,578.50 | -6,461.45 | 4,586.86 | 14,427,877.83 | 1,709,578.69 | 39.72825628 | -80.75401018 | |
| 13,400.03 | 89.10 | 150.00 | 6,580.07 | -6,548.04 | 4,636.85 | 14,427,791.23 | 1,709,628.68 | 39.72801809 | -80.75383322 | |
| 13,500.03 | 89.10 | 150.00 | 6,581.64 | -6,634.64 | 4,686.85 | 14,427,704.64 | 1,709,678.67 | 39.72777991 | -80.75365625 | |
| 13,600.03 | 89.10 | 150.00 | 6,583.22 | -6,721.23 | 4,736.84 | 14,427,618.05 | 1,709,728.67 | 39.72754172 | -80.75347929 | |
| 13,700.03 | 89.10 | 150.00 | 6,584.79 | -6,807.82 | 4,786.83 | 14,427,531.46 | 1,709,778.66 | 39.72730354 | -80.75330233 | |
| 13,800.03 | 89.10 | 150.00 | 6,586.36 | -6,894.41 | 4,836.83 | 14,427,444.86 | 1,709,828.65 | 39.72706535 | -80.75312537 | |
| 13,900.03 | 89.10 | 150.00 | 6,587.93 | -6,981.01 | 4,886.82 | 14,427,358.27 | 1,709,878.65 | 39.72682716 | -80.75294842 | |
| 14,000.03 | 89.10 | 150.00 | 6,589.50 | -7,067.60 | 4,936.81 | 14,427,271.68 | 1,709,928.64 | 39.72658898 | -80.75277148 | |
| 14,100.03 | 89.10 | 150.00 | 6,591.07 | -7,154.19 | 4,986.80 | 14,427,185.09 | 1,709,978.63 | 39.72635079 | -80.75259450 | |
| 14,200.03 | 89.10 | 150.00 | 6,592.64 | -7,240.78 | 5,036.80 | 14,427,098.49 | 1,710,028.62 | 39.72611260 | -80.75241755 | |
| 14,300.03 | 89.10 | 150.00 | 6,594.21 | -7,327.38 | 5,086.79 | 14,427,011.90 | 1,710,078.62 | 39.72587441 | -80.75224060 | |
| 14,400.03 | 89.10 | 150.00 | 6,595.78 | -7,413.97 | 5,136.78 | 14,426,925.31 | 1,710,128.61 | 39.72563623 | -80.75206365 | |
| 14,500.03 | 89.10 | 150.00 | 6,597.35 | -7,500.56 | 5,186.76 | 14,426,838.72 | 1,710,178.60 | 39.72539804 | -80.75188670 | |
| 14,600.03 | 89.10 | 150.00 | 6,598.92 | -7,587.15 | 5,236.77 | 14,426,752.12 | 1,710,228.60 | 39.72515985 | -80.75170975 | |
| 14,700.03 | 89.10 | 150.00 | 6,600.50 | -7,673.75 | 5,286.76 | 14,426,665.53 | 1,710,278.59 | 39.72492166 | -80.75153280 | |
| 14,800.03 | 89.10 | 150.00 | 6,602.07 | -7,760.34 | 5,336.76 | 14,426,578.94 | 1,710,328.58 | 39.72468347 | -80.75135585 | |
| 14,900.03 | 89.10 | 150.00 | 6,603.64 | -7,846.93 | 5,386.75 | 14,426,492.35 | 1,710,378.58 | 39.72444528 | -80.75117891 | |
| 15,000.03 | 89.10 | 150.00 | 6,605.21 | -7,933.52 | 5,436.74 | 14,426,405.76 | 1,710,428.57 | 39.72420709 | -80.75100196 | |
| 15,100.03 | 89.10 | 150.00 | 6,606.78 | -8,020.12 | 5,486.74 | 14,426,319.16 | 1,710,478.56 | 39.72396890 | -80.75082502 | |
| 15,200.03 | 89.10 | 150.00 | 6,608.35 | -8,106.71 | 5,536.73 | 14,426,232.57 | 1,710,528.55 | 39.72373071 | -80.75064808 | |



MAA

| | | | |
|------------------|---------------------------------|-------------------------------------|-------------------------|
| Database: | DB_Jul2216dt_v14 | Local Co-ordinate Reference: | Well Hillrock 09 HM (i) |
| Company: | Tug Hill Operating LLC | TVD Reference: | gl @ 1219.00ft |
| Project: | Marshall County, West Virginia. | MD Reference: | gl @ 1219.00ft |
| Site: | Hillrock/Simms | North Reference: | Grid |
| Well: | Hillrock 09 HM (i) | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | Original Hole | | |
| Design: | rev1 | | |

| Planned Survey | | | | | | | | | |
|---------------------|-----------------|-------------|---------------------|------------|------------|---------------------|--------------------|-------------|--------------|
| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
| 15,300.03 | 89.10 | 150.00 | 6,609.92 | -8,193.30 | 5,586.72 | 14,426,145.98 | 1,710,578.55 | 39.72349252 | -80.75047114 |
| 15,400.03 | 89.10 | 150.00 | 6,611.49 | -8,279.89 | 5,636.71 | 14,426,059.39 | 1,710,628.54 | 39.72325433 | -80.75029420 |
| 15,500.03 | 89.10 | 150.00 | 6,613.06 | -8,366.49 | 5,686.71 | 14,425,972.79 | 1,710,678.53 | 39.72301614 | -80.75011726 |
| 15,600.03 | 89.10 | 150.00 | 6,614.63 | -8,453.08 | 5,736.70 | 14,425,886.20 | 1,710,728.53 | 39.72277795 | -80.74994032 |
| 15,700.03 | 89.10 | 150.00 | 6,616.20 | -8,539.57 | 5,786.69 | 14,425,799.61 | 1,710,778.52 | 39.72253976 | -80.74976339 |
| 15,800.03 | 89.10 | 150.00 | 6,617.78 | -8,626.26 | 5,836.69 | 14,425,713.02 | 1,710,828.51 | 39.72230157 | -80.74958645 |
| 15,900.03 | 89.10 | 150.00 | 6,619.35 | -8,712.86 | 5,886.68 | 14,425,626.42 | 1,710,878.50 | 39.72206337 | -80.74940952 |
| 16,000.03 | 89.10 | 150.00 | 6,620.92 | -8,799.45 | 5,936.67 | 14,425,539.83 | 1,710,928.50 | 39.72182518 | -80.74923259 |
| 16,100.03 | 89.10 | 150.00 | 6,622.49 | -8,886.04 | 5,986.67 | 14,425,453.24 | 1,710,978.49 | 39.72158699 | -80.74905566 |
| 16,200.03 | 89.10 | 150.00 | 6,624.06 | -8,972.63 | 6,036.66 | 14,425,366.65 | 1,711,028.48 | 39.72134880 | -80.74887873 |
| 16,300.03 | 89.10 | 150.00 | 6,625.63 | -9,059.23 | 6,086.65 | 14,425,280.05 | 1,711,078.48 | 39.72111080 | -80.74870180 |
| 16,400.03 | 89.10 | 150.00 | 6,627.20 | -9,145.82 | 6,136.65 | 14,425,193.46 | 1,711,128.47 | 39.72087241 | -80.74852487 |
| 16,500.03 | 89.10 | 150.00 | 6,628.77 | -9,232.41 | 6,186.64 | 14,425,106.87 | 1,711,178.46 | 39.72063421 | -80.74834795 |
| 16,578.27 | 89.10 | 150.00 | 6,630.00 | -9,300.16 | 6,225.75 | 14,425,039.12 | 1,711,217.58 | 39.72044786 | -80.74820953 |

PBHL/TD 16578.27 MD/6630.00 TVD

| Design Targets | | | | | | | | | |
|--|---------------|--------------|----------|------------|------------|-----------------|----------------|-------------|--------------|
| Target Name | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
| Hillrock 09 HM LP - hit/miss target - Shape - Point | 0.00 | 0.00 | 6,479.00 | -976.45 | 1,420.17 | 14,433,362.82 | 1,706,412.00 | 39.74334300 | -80.76522200 |
| Hillrock 09 HM PBHL r1 - plan hits target center - Point | 0.00 | 0.00 | 6,630.00 | -9,300.16 | 6,225.75 | 14,425,039.12 | 1,711,217.58 | 39.72044785 | -80.74820952 |

| Plan Annotations | | | | | |
|---------------------|---------------------|-------------------|------------|---------------------------------|--|
| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates | | Comment | |
| | | +N/-S (ft) | +E/-W (ft) | | |
| 1,400.00 | 1,400.00 | 0.00 | 0.00 | KOP Begin 2°/100' build | |
| 2,196.97 | 2,186.73 | -48.67 | 98.81 | Begin 15.94° tangent section | |
| 6,206.59 | 6,042.20 | -535.17 | 1,086.60 | Begin 10°/100' build/turn | |
| 6,665.75 | 6,468.84 | -891.10 | 1,369.31 | Begin 89.10° lateral section | |
| 16,578.27 | 6,630.00 | -9,300.16 | 6,225.75 | PBHL/TD 16578.27 MD/6630.00 TVD | |

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WV Department of
Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Hillrock 9HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle New Martinsville 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 containment

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 965, UIC 369, 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 EC#1386426)

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

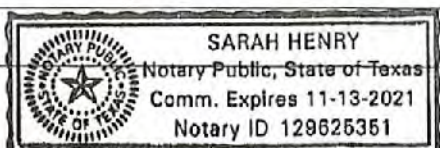
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WV Department of Environmental Protection

Subscribed and sworn before me this 18 day of June, 2018

Notary Public

My commission expires _____



Sarah Henry

Form WW-9

Operator's Well No. Hillrock 9HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 11.63 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

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: *Justin Nielsen*

Comments: _____

Title: Oil and Gas Inspector

Date: 6/20/18

Field Reviewed? Yes No

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Environmental Protection

WW-9

PROPOSED HILLROCK 9HM

SUPPLEMENT PG 1

DRAWING NOT TO SCALE

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.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

KENNETH N. COBLEY et al.
T.M. 9/8
120 Acres

TERRY E. SMITH ET AL
T.M. 2/7
12,027 ACRES

WILLIAM + VIRGINIA ROUTE
T.M. 28/83
94 Acres

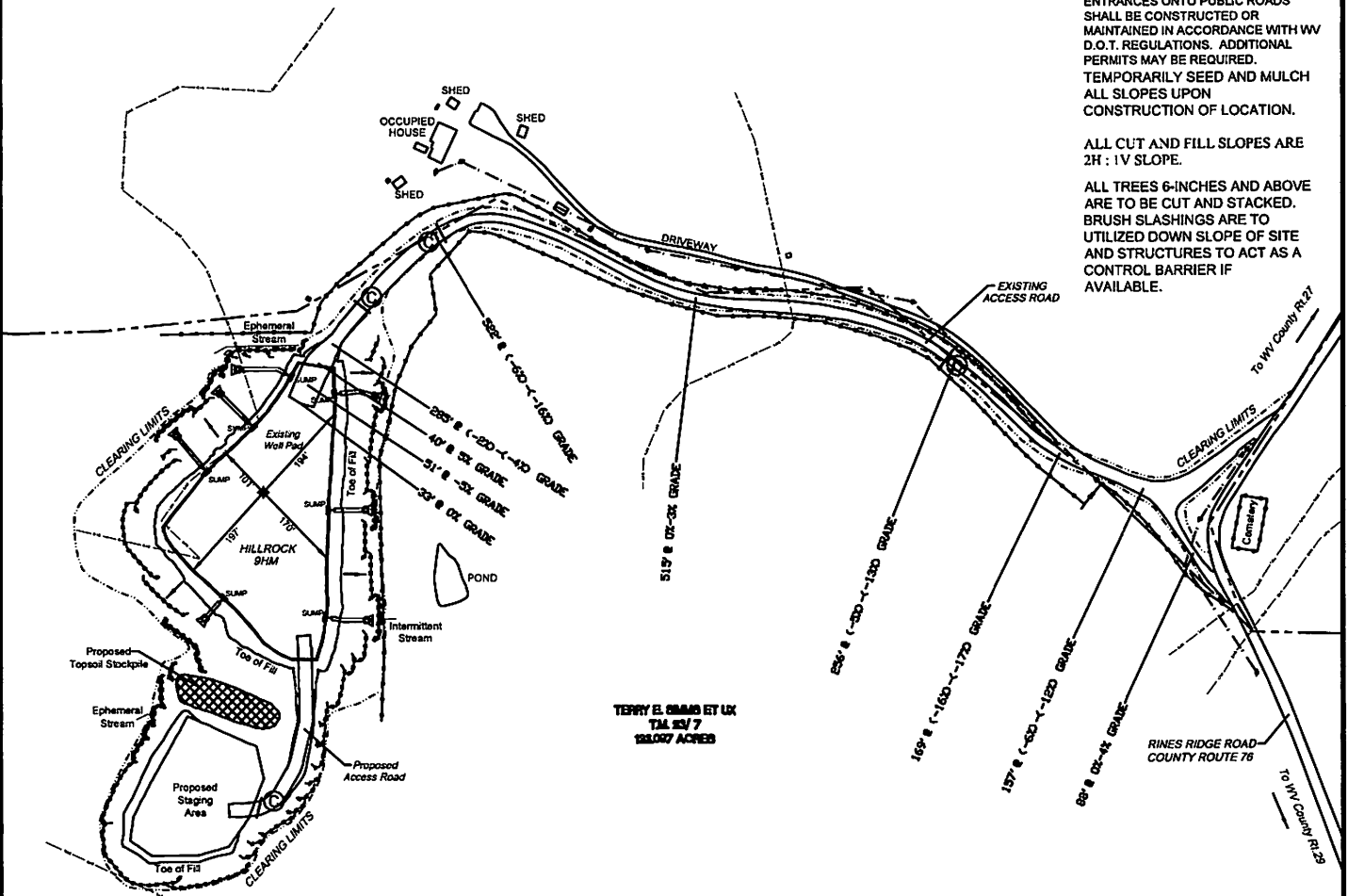
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Environmental Protection

LEGEND

Note:
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 - - - - - Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary





Well Site Safety Plan

Tug Hill Operating, LLC

JV
6/28/18

Well Name: Hillrock 9HM

Pad Location: Simms Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,399,595.41

Easting: 519,682.55

June 2018

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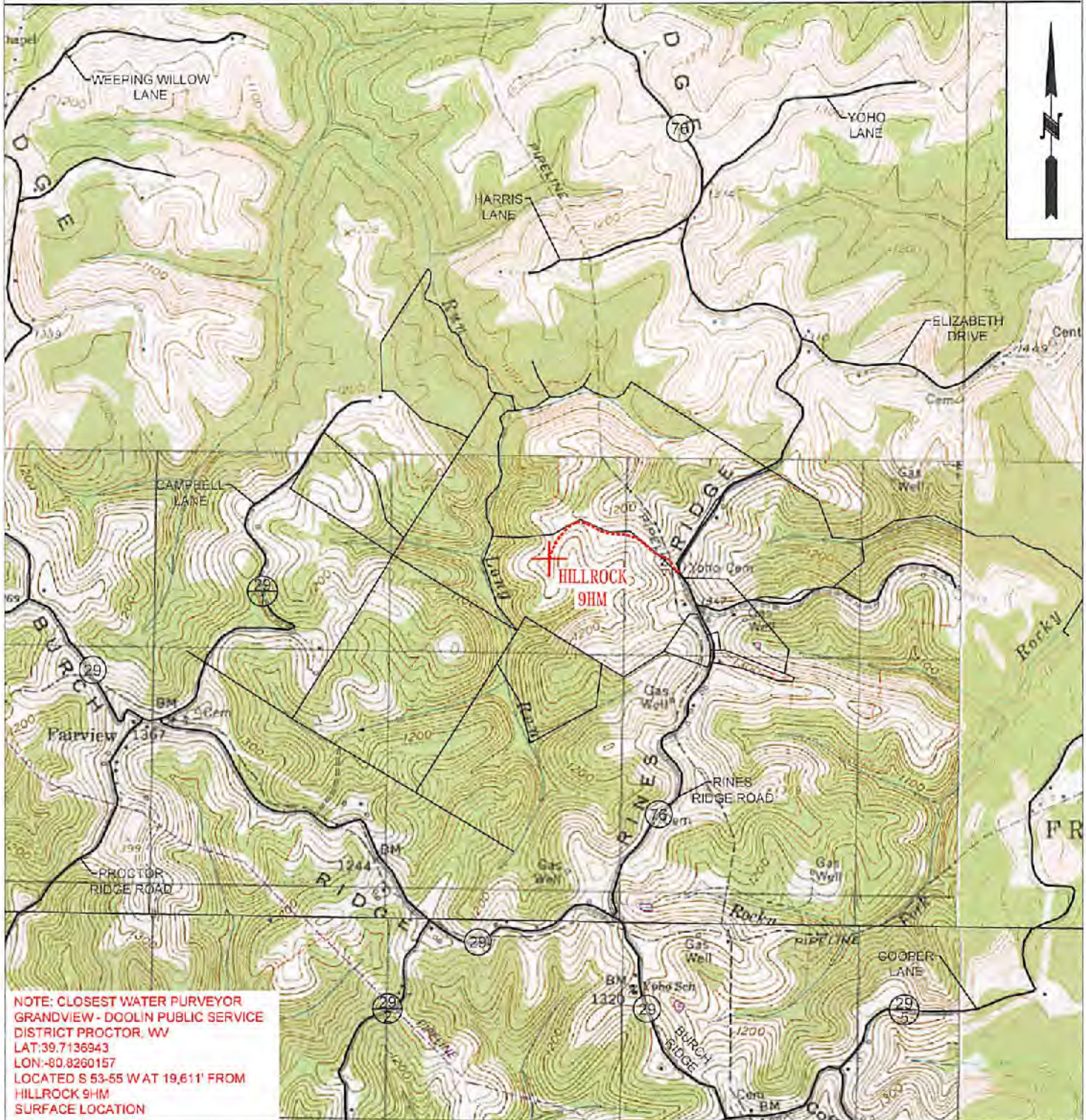
WW-9

JUL 2 2018

WV Department of
Environmental Protection

**PROPOSED
HILLROCK 9HM**

SUPPLEMENT PG 2



**NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT: 39.7136943
LON: -80.8260157
LOCATED S 53-55 WAT 19,611' FROM
HILLROCK 9HM
SURFACE LOCATION**

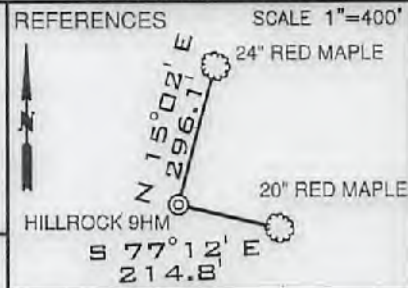


| | | | |
|--|-----------|-----------------------|-------------------|
| OPERATOR | 494510851 | TOPO SECTION | LEASE NAME |
| TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317 | | NEW MARTINSVILLE 7.5' | HILLROCK |
| | | SCALE: | DATE: |
| | | 1" = 2000' | DATE: 06-11-2018 |

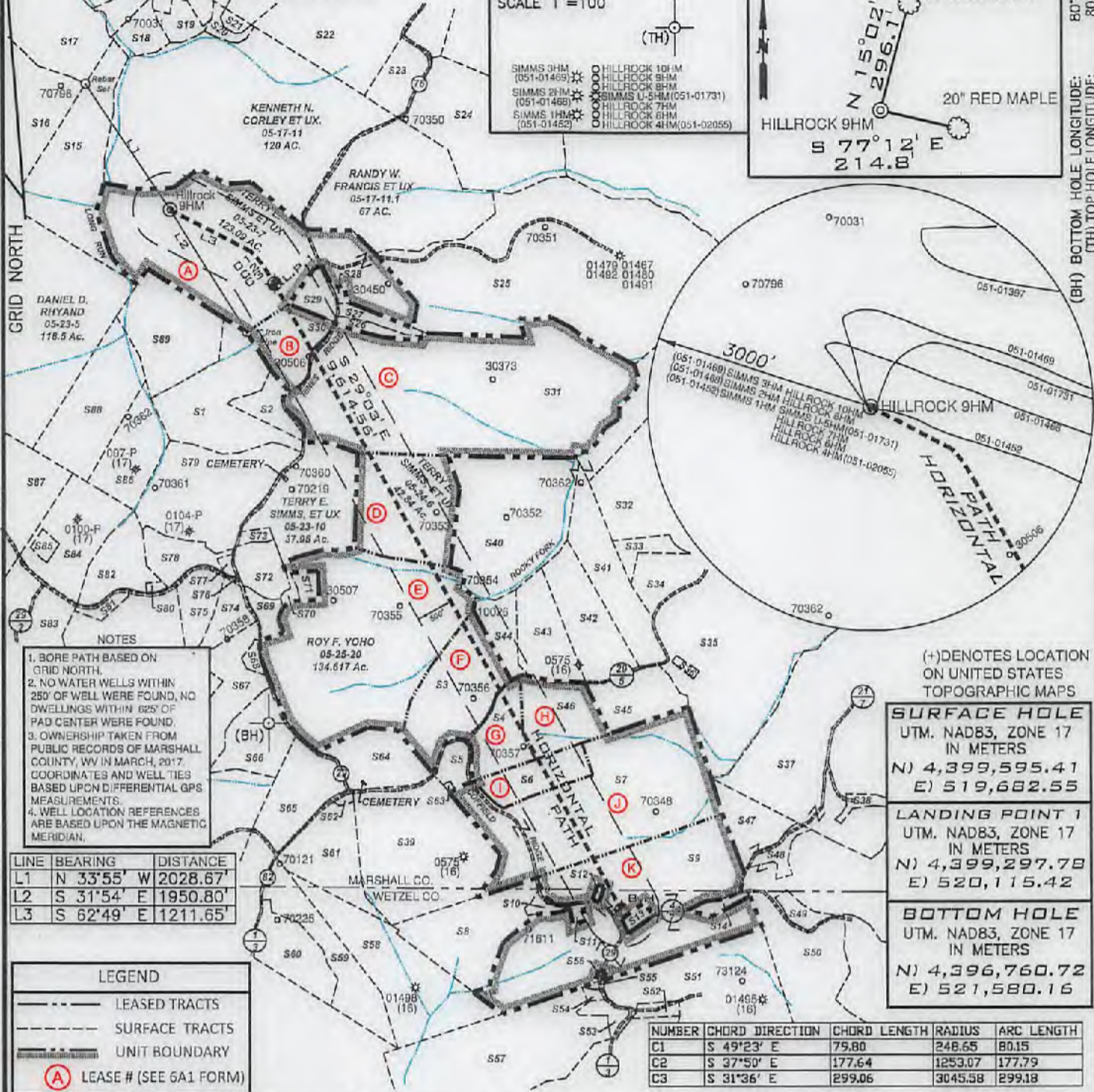
**HILLROCK LEASE
WELL 9HM
750.788± ACRES**

TOP HOLE LATITUDE: 39°45'00"
BOTTOM HOLE LATITUDE: 39°45'00"

DETAIL SKETCH "A"
SCALE 1"=100'



- LEGEND**
- LEASED TRACTS
 - - - SURFACE TRACTS
 - UNIT BOUNDARY
 - (A) LEASE # (SEE 6A1 FORM)



- NOTES**
1. BORE PATH BASED ON GRID NORTH.
 2. NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
 3. OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 4. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

| LINE | BEARING | DISTANCE |
|------|------------|----------|
| L1 | N 33°55' W | 2028.67' |
| L2 | S 31°54' E | 1950.80' |
| L3 | S 62°49' E | 1211.65' |

LEGEND

- LEASED TRACTS
- - - SURFACE TRACTS
- UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

| SURFACE HOLE | |
|---------------------|---------------|
| UTM. NAD83, ZONE 17 | IN METERS |
| N) 4,399,595.41 | E) 519,682.55 |
| LANDING POINT 1 | |
| UTM. NAD83, ZONE 17 | IN METERS |
| N) 4,399,297.78 | E) 520,115.42 |
| BOTTOM HOLE | |
| UTM. NAD83, ZONE 17 | IN METERS |
| N) 4,396,760.72 | E) 521,580.16 |

| NUMBER | CHORD DIRECTION | CHORD LENGTH | RADIUS | ARC LENGTH |
|--------|-----------------|--------------|---------|------------|
| C1 | S 49°23' E | 79.80 | 248.65 | 80.15 |
| C2 | S 37°50' E | 177.64 | 1253.07 | 177.79 |
| C3 | S 31°36' E | 299.06 | 3045.58 | 299.18 |

FILE NUMBER _____

DRAWING NUMBER HILLROCK_WP_9HM

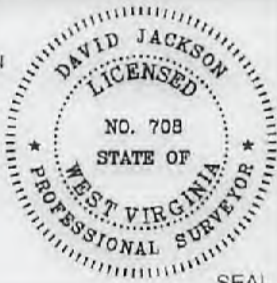
SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

PROVEN SOURCE OF ELEVATION SUBMETER MAPPING GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

David L Jackson



JACKSON SURVEYING INC.
P.O. Box 1450
Clarksburg, WV 26302
304-523-5851

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION ELEVATION 1219.5' WATERSHED (HUC 10) FISH CREEK

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER TERRY E. & DEBORAH SIMMS ACREAGE 123.09

OIL & GAS ROYALTY OWNER TERRY E. & DEBORAH L. SIMMS, ET AL - SEE WW-6A1 FORM LEASE ACREAGE 319.91

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 6,595' TMD: 16,578'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER CT CORPORATION SYSTEM

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313

COUNTY NAME
PERMIT

**HILLROCK LEASE
WELL 9HM
750.788± ACRES**

| Number | TAX MAP--PARCEL | ADJOINER OWNER | ACRES |
|--------|-----------------|-------------------------------------|----------|
| S1 | 05-24-5.4 | Thomas V. Tuttle, et ux | 38.224 |
| S2 | 05-24-5.3 | Thomas V. Tuttle, et ux | 8.543 |
| S3 | 05-25-01 | Michael L. Mason | 35.43 |
| S4 | 05-25-13 | Nicolas J. & Debra L. Klug | 16.014 |
| S5 | 05-25-13.2 | David A. Klug | 5.89 |
| S6 | 05-25-12.1 | Kent & Betty Mason | 15.0 |
| S7 | 05-25-12 | Marion Parsons Jr., et al | 85.16 |
| S8 | 05-25-11.4 | Edward W. Klug, et ux | 32.787 |
| S9 | 05-25-11.2 | James W. Klug | 114.305 |
| S10 | 05-25-11.1 | Edward W. Klug et ux | 2.343 |
| S11 | 12-03-44 | James A. & Jo C. Estep | 1.10 |
| S12 | 12-03-47 | Wetzel County Emergency Ambulance | 0.50 |
| S13 | 12-03-43 | Adam W. Ferrell & Brittany M. Loy | 1.97 |
| S14 | 12-03-42 | J. M. Klug | 2.617 |
| S15 | 05-23-06 | James A. Channing, et al | 48.0 |
| S16 | 05-18-21 | Curtis E. & Michelle J. Hall | 43.119 |
| S17 | 05-18-20 | Wayne E. Channing, et al | 75.6 |
| S18 | 05-18-31 | Kenneth E. Rastall | 6.94 |
| S19 | 05-18-32 | Kenneth E. Rastall | 5.335 |
| S20 | 05-17-12 | James A. & Jill C. Corley | 3.33 |
| S21 | 05-17-12.1 | Williams Ohio Valley Midstream, LLC | 1.67 |
| S22 | 05-17-10 | James A. Corley, et al | 92.61 |
| S23 | 05-17-9.3 | James A. Corley, et ux | 12.478 |
| S24 | 05-17-9.4 | Vicki L. Bowen | 60.3 |
| S25 | 05-24-1 | Linda L. Hendrickson | 175.0 |
| S26 | 05-24-5.2 | James D. Watkins, et ux | 3.151 |
| S27 | 05-24-5.1 | James D. Watkins, et ux | 4.6 |
| S28 | 05-23-7.1 | H.J. Weigand, et ux | 0.549 |
| S29 | 05-23-7.2 | H.J. Weigand, et ux | 6.354 |
| S30 | 05-24-5.5 | H.J. Weigand, et ux | 17.194 |
| S31 | 05-24-5 | Robert C. Francis et ux (Life) | 145.788 |
| S32 | 05-24-3.2 | T.H. Exploration II, LLC | 49.0 |
| S33 | 05-24-3.1 | T.H. Exploration II, LLC | 5.50 |
| S34 | 05-25-2.2 | John G. Klug, Sr. et ux | 10.0 |
| S35 | 05-25-2 | James W. Klug | 122.3 |
| S36 | 05-25-2.1 | Nancy Jackson | 1.0 |
| S37 | 05-25-3 | S.D. Fertitta, et ux | 181.548 |
| S38 | 05-25-3.1 | S.D. Fertitta, et ux | 3.022 |
| S39 | 05-25-14.1 | Bernard R. Weigand, et ux | 65.0 |
| S40 | 05-24-04 | Terry E. Simms, et ux | 84.05 |
| S41 | 05-25-1.4 | Samantha J. & Philip A. Namlik | 100.7235 |
| S42 | 05-25-1.3 | Michael E. & Annie A. Chapman | 26.2 |
| S43 | 05-25-1.2 | William Jr. & Andrea J. Dubiel | 20.1 |
| S44 | 05-25-1.1 | Ryan A. & Jacqueline E. Layman | 9.79 |
| S45 | 05-25-13.3 | William M. Sr. & Cynthia A. Ferda | 17.21 |

| Number | TAX MAP--PARCEL | ADJOINER OWNER | ACRES |
|--------|-----------------|--|--------|
| S46 | 05-25-1.5 | Ryan J. Bratton | 21.35 |
| S47 | 05-25-10 | Terry L. & Tammy J. Kirkland | 18.75 |
| S48 | 05-25-10.1 | Terry L. & Tammy J. Kirkland (Life) | 5.250 |
| S49 | 12-03-41 | Carl L. Kirkland | 4.102 |
| S50 | 12-03-41.1 | Terry L. & Tammy J. Kirkland | 74.138 |
| S51 | 12-03-4 | Albert L. & Mary Hohman et al | 85.0 |
| S52 | 12-03-02 | Robert Lee & Diana G. Smith | 2.48 |
| S53 | 12-03-4.3 | Joseph P. & Barbara A. Cain | 3.619 |
| S54 | 12-03-4.6 | Steven P. Woyman | 1.009 |
| S55 | 12-03-4.5 | Hazel M. Blair | 0.451 |
| S56 | 12-03-01 | James W. Klug | 0.375 |
| S57 | 12-03-4.7 | Joseph P. & Barbara A. Cain | 67.3 |
| S58 | 12-02-14 | David L. Cunningham | 56.23 |
| S59 | 12-02-14.2 | Donald Lee Anderson, et al | 4.2 |
| S60 | 12-02-14.1 | Richard Joseph Otte, et ux | 1.25 |
| S61 | 15-25-16.1 | David L. Cunningham | 6.34 |
| S62 | 05-25-16.2 | Rodney J. Loy | 1.087 |
| S63 | 05-25-13.1 | Morgan Chad Gump, et ux | 0.9 |
| S64 | 05-25-14 | Roy F. Yoho | 23.0 |
| S65 | 05-25-16 | Emily Jones Irrevocable Trust | 23.5 |
| S66 | 05-25-17 | Emily Jones Irrevocable Trust | 22.79 |
| S67 | 05-25-18 | Joseph Johnson, et ux (Life) | 37.746 |
| S68 | 05-25-19 | Joseph Johnson, et ux (Life) | 1.973 |
| S69 | 05-25-20.3 | James A. & Jo C. Estep | 4.49 |
| S70 | 05-25-20.2 | James M. Zombotti | 1.347 |
| S71 | 05-25-20.1 | James M. Zombotti | 2.746 |
| S72 | 05-23-11 | Roy F. Yoho | 3.445 |
| S73 | 05-23-11.7 | Bryan L. Huggins | 1.835 |
| S74 | 05-23-11.5 | Roy F. Yoho | 9.25 |
| S75 | 05-23-11.3 | Colin R. Yoho | 11.29 |
| S76 | 05-23-11.6 | T.H. Exploration II, LLC & Atinum Marcellus I, LLC | 0.094 |
| S77 | 05-23-11.2 | Evelyn Hudson | 1.154 |
| S78 | 05-23-11.4 | Evelyn Hudson | 10.879 |
| S79 | 05-23-11.1 | John H. & Sonya D. Holliday | 46.482 |
| S80 | 05-23-13.1 | James R. & Pamela J. Ferrell | 0.7625 |
| S81 | 05-23-12 | Mark A. Yoho | 3.05 |
| S82 | 05-23-13 | Linda D. Greathouse | 14.24 |
| S83 | 05-23-9.1 | John W. Van Orden et ux | 23.376 |
| S84 | 05-23-9.2 | Linda D. Greathouse | 25.58 |
| S85 | 05-23-9.4 | Jackson R. Sr. & Deonna L. Davis | 2.087 |
| S86 | 05-23-9.3 | Linda D. Greathouse | 17.5 |
| S87 | 05-23-14 | Dominion Transmission, Inc. | 59.5 |
| S88 | 05-23-08 | Carl David & Suzanne L. Guseman | 29.5 |
| S89 | 05-23-8.1 | William & Virginia Roupe | 34.0 |



P.S. 708 *David L Jackson*

| | | | | |
|---|------------|----------|--------------|--|
|  <p>TUG HILL OPERATING</p> | OPERATOR'S | WELL #: | HILLROCK 9HM | <p>WELL PLAT</p> <p>PAGE 2 OF 2</p> <p>DATE: 06/26/2018</p> |
| | DISTRICT: | Franklin | | |
| | COUNTY: | Marshall | | |
| | STATE: | WV | | |

WW-6A1
(5/13)

Operator's Well No. Hillrock 9HM

**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 pages

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Office of Oil and Gas

JUL 2 2018


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

4705102066

WW-6A1 Supplement

4705102066
Operator's Well No. Hillrock - 9HM

| Lease No. | Tags | Parcel | Lessor | Lessee | Royalty | Book | Page | Assignment | Assignment | Assignment | Assignment | Assignment | Assignment | Assignment |
|-----------|------|----------|-----------------------------------|----------------------------|---------|------|------|------------|--|--|--|---|--|---|
| 10*14140 | A | 5-23-7 | TERRY E SIMMS AND DEBORAH L SIMMS | TRIENERGY, INC | 1/8+ | 666 | 529 | NA | 20/348 Trienergy, Inc to AB Resources LLC | 21/491 AB Resources LLC to Chief Exploration & Development LLC | 685/643 Chief Exploration & Development and Radler 2000 Limited Partnership to Enerplus Resources Corp | 24/39 AB Resources LLC, Chief Exploration & Development LLC, Radler 2000 Limited Partnership and Enerplus Resources Corp to Gastar Exploration USA, Inc | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14797 | B | 5-24-5.5 | ORVILLE YOUNG | GASTAR EXPLORATION USA INC | 1/8+ | 800 | 598 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14814 | B | 5-24-5.5 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION INC | 1/8+ | 827 | 537 | NA | NA | NA | NA | NA | WW-6A1 Supplement | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14815 | B | 5-24-5.5 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION INC | 1/8+ | 827 | 535 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14817 | B | 5-24-5.5 | DONNA V YOHO | GASTAR EXPLORATION INC | 1/8+ | 874 | 351 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14818 | B | 5-24-5.5 | DEWEY A MILICIA | GASTAR EXPLORATION INC | 1/8+ | 875 | 591 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14819 | B | 5-24-5.5 | NICOLETTA MILICIA BLOODWORTH | GASTAR EXPLORATION INC | 1/8+ | 875 | 593 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14820 | B | 5-24-5.5 | DANA MILICIA HUMPHREYS | GASTAR EXPLORATION INC | 1/8+ | 875 | 595 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14821 | B | 5-24-5.5 | JANICE HAUDENSCHILT | GASTAR EXPLORATION INC | 1/8+ | 875 | 597 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14822 | B | 5-24-5.5 | ONWARD E BURGE TRUST | GASTAR EXPLORATION INC | 1/8+ | 876 | 463 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14823 | B | 5-24-5.5 | SARAH L BURGE TRUST | GASTAR EXPLORATION INC | 1/8+ | 876 | 459 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*17181 | B | 5-24-5.5 | PAUL F HAMMERS | CHESAPEAKE APPALACHIA LLC | 1/8+ | 705 | 593 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17182 | B | 5-24-5.5 | TWILA ORA WHIPKEY | CHESAPEAKE APPALACHIA LLC | 1/8+ | 715 | 505 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17184 | B | 5-24-5.5 | KERMIT L. PARSONS | CHESAPEAKE APPALACHIA LLC | 1/8+ | 716 | 83 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |

| | | | | | | | | | | | | | | |
|----------|---|----------|------------------------------------|----------------------------|------|-----|-----|--|---|--|--|--|--|---|
| 10*17195 | B | 5-24-5.5 | PATRICIA HARTMAN | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 317 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17196 | B | 5-24-5.5 | DELBERT R. MONTGOMERY | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 311 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17197 | B | 5-24-5.5 | GLORIA J. SIMMONS HAROLD SIMMONS | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 313 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17199 | B | 5-24-5.5 | PAMELA L DRAZIC AND JEFFREY DRAZIC | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 315 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17200 | B | 5-24-5.5 | STEPHANIE L. HALL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 156 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17201 | B | 5-24-5.5 | DENISE A GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 395 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17202 | B | 5-24-5.5 | JANE GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 385 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17203 | B | 5-24-5.5 | BARRY RAY MOORE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 387 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |

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Environmental Protection

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|----------|---|----------|---|----------------------------|------|-----|-----|--|---|--|--|--|--|---|
| 10*17204 | B | 5-24-5.5 | CLARENCE RICHARD ZESIGER & MARY ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 391 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17206 | B | 5-24-5.5 | M VIRGINIA & EDWARD C MARSH | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 399 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17207 | B | 5-24-5.5 | DEBORAH K. KLIMASZEWSKI FRANK KLIMASZEWSKI, SR. | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 389 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17210 | B | 5-24-5.5 | MARILYN NOEL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 393 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17211 | B | 5-24-5.5 | GARY WAYNE ZESIGER & VICKIE ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 397 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17212 | B | 5-24-5.5 | DARRELL NEWLAND LYDIA NEWLAND | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 158 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17213 | B | 5-24-5.5 | CAROL DEEN GARDNER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 154 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*18275 | B | 5-24-5.5 | BETTY JEAN NEELY | TH EXPLORATION, LLC | 1/8+ | 929 | 60 | NA | NA | NA | NA | NA | NA | NA |
| 10*18366 | B | 5-24-5.5 | MARY LOU WILSON AND STANLEY D WILSON | TH EXPLORATION, LLC | 1/8+ | 931 | 311 | NA | NA | NA | NA | NA | NA | NA |
| 10*18369 | B | 5-24-5.5 | CRAIG ALAN YOHO AND DONNA M YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 303 | NA | NA | NA | NA | NA | NA | NA |
| 10*18370 | B | 5-24-5.5 | SAMUEL D YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 300 | NA | NA | NA | NA | NA | NA | NA |

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| 10*18379 | B | 5-24-5.5 | DAVID N DEVICK TRUSTEE OF THE TONI JO MASON LIVING TRUST | TH EXPLORATION, LLC | 1/8+ | 932 | 439 | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19540 | B | 5-24-5.5 | ERICA M MASON | TH EXPLORATION, LLC | 1/8+ | 942 | 53 | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19652 | B | 5-24-5.5 | JACK R HAMMERS | TH EXPLORATION, LLC | 1/8+ | 944 | 108 | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19903 | B | 5-24-5.5 | PAUL F HAMMERS | TH EXPLORATION, LLC | 1/8+ | 948 | 236 | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*14797 | C | 5-24-5 | ORVILLE YOUNG | GASTAR EXPLORATION USA INC | 1/8+ | 800 | 598 | NA | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14814 | C | 5-24-5 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION INC | 1/8+ | 827 | 537 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14815 | C | 5-24-5 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION INC | 1/8+ | 827 | 535 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14817 | C | 5-24-5 | DONNA V YOHO | GASTAR EXPLORATION INC | 1/8+ | 874 | 351 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14818 | C | 5-24-5 | DEWEY A MILICIA | GASTAR EXPLORATION INC | 1/8+ | 875 | 591 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14819 | C | 5-24-5 | NICOLETTA MILICIA BLOODWORTH | GASTAR EXPLORATION INC | 1/8+ | 875 | 593 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14820 | C | 5-24-5 | DANA MILICIA HUMPHREYS | GASTAR EXPLORATION INC | 1/8+ | 875 | 595 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14821 | C | 5-24-5 | JANICE HAUDENSCHILT | GASTAR EXPLORATION INC | 1/8+ | 875 | 597 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14822 | C | 5-24-5 | ONWARD E BURGE TRUST | GASTAR EXPLORATION INC | 1/8+ | 876 | 463 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14823 | C | 5-24-5 | SARAH L BURGE TRUST | GASTAR EXPLORATION INC | 1/8+ | 876 | 459 | NA | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*17181 | C | 5-24-5 | PAUL F HAMMERS | CHESAPEAKE APPALACHIA LLC | 1/8+ | 705 | 593 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC | |
| 10*17182 | C | 5-24-5 | TWILA ORA WHIPKEY | CHESAPEAKE APPALACHIA LLC | 1/8+ | 715 | 505 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC | |
| 10*17184 | C | 5-24-5 | KERMIT L. PARSONS | CHESAPEAKE APPALACHIA LLC | 1/8+ | 716 | 505 | NA | 29/325 Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc | 33/110 Chesapeake LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC | 19/624 SWN Exchange Titleholder LLC merger SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC | |

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| 10*17195 | C | 5-24-5 | PATRICIA HARTMAN | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 317 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17196 | C | 5-24-5 | DELBERT R. MONTGOMERY | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 311 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17197 | C | 5-24-5 | GLORIA J. SIMMONS HAROLD SIMMONS | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 313 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17199 | C | 5-24-5 | PAMELA L DRAZIC AND JEFFREY DRAZIC | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 315 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17200 | C | 5-24-5 | STEPHANIE L. HALL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 156 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17201 | C | 5-24-5 | DENISE A GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 395 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17202 | C | 5-24-5 | JANE GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 385 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17203 | C | 5-24-5 | BARRY RAY MOORE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 387 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |

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| 10*17204 | C | 5-24-5 | CLARENCE RICHARD ZESIGER & MARY ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 391 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17206 | C | 5-24-5 | M VIRGINIA & EDWARD C MARSH | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 399 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17207 | C | 5-24-5 | DEBORAH K. KLIMASZEWSKI FRANK KLIMASZEWSKI, SR. | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 389 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17210 | C | 5-24-5 | MARILYN NOEL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 393 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17211 | C | 5-24-5 | GARY WAYNE ZESIGER & VICKIE ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 397 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17212 | C | 5-24-5 | DARRELL NEWLAND LYDIA NEWLAND | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 158 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17213 | C | 5-24-5 | CAROL DEEN GARDNER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 154 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*18275 | C | 5-24-5 | BETTY JEAN NEELY | TH EXPLORATION, LLC | 1/8+ | 929 | 60 | NA | NA | NA | NA | NA | NA | NA |
| 10*18366 | C | 5-24-5 | MARY LOU WILSON AND STANLEY D WILSON | TH EXPLORATION, LLC | 1/8+ | 931 | 311 | NA | NA | NA | NA | NA | NA | NA |
| 10*18369 | C | 5-24-5 | CRAIG ALAN YOHO AND DONNA M YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 303 | NA | NA | NA | NA | NA | NA | NA |
| 10*18370 | C | 5-24-5 | SAMUEL D YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 300 | NA | NA | NA | NA | NA | NA | NA |

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| 10*18379 | C | 5-24-5 | DAVID N DEVICK TRUSTEE OF THE TONI JO MASON LIVING TRUST | TH EXPLORATION, LLC | 1/8+ | 932 | 439 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19540 | C | 5-24-5 | ERICA M MASON | TH EXPLORATION, LLC | 1/8+ | 942 | 53 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19652 | C | 5-24-5 | JACK R HAMMERS | TH EXPLORATION, LLC | 1/8+ | 944 | 108 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*19903 | C | 5-24-5 | PAUL F HAMMERS | TH EXPLORATION, LLC | 1/8+ | 948 | 236 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*14558 | D | 5-24-6 | KLOVA ANN MORRIS | GASTAR EXPLORATION USA INC | 1/8+ | 765 | 434 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14559 | D | 5-24-6 | WILLIAM L LITMAN | GASTAR EXPLORATION USA INC | 1/8+ | 767 | 258 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14560 | D | 5-24-6 | AARON DEAN LITMAN | GASTAR EXPLORATION USA INC | 1/8+ | 767 | 262 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14561 | D | 5-24-6 | THE ESTATE OF MERNA NELSON C/O ULA NELSON | GASTAR EXPLORATION USA INC | 1/8+ | 770 | 474 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14562 | D | 5-24-6 | MARY VOLTZ | GASTAR EXPLORATION USA INC | 1/8+ | 773 | 575 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14563 | D | 5-24-6 | JACK MICHAEL FOREMAN | GASTAR EXPLORATION USA INC | 1/8+ | 796 | 44 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*14564 | D | 5-24-6 | JULIE SPRINGWATER | GASTAR EXPLORATION USA INC | 1/8+ | 799 | 57 | NA | NA | 27/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 28/499 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 806/1 Gastar Exploration USA, Inc to Atinum Marcellus I LLC | 21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger | 36/9 Gastar Exploration Inc to TH Exploration II, LLC | | | |
| 10*17597 | D | 5-24-6 | JOHN P ICARD AND REVA J ICARD | TH EXPLORATION, LLC | 1/8+ | 765 | 432 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*17626 | D | 5-24-6 | VICKI LYNN AND RICHARD FRANKLIN WOOD | TH EXPLORATION, LLC | 1/8+ | 917 | 60 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*18174 | D | 5-24-6 | THE ESTATE OF ROY JOSEPH LEACH | TH EXPLORATION, LLC | 1/8+ | 927 | 647 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*21455 | D | 5-24-6 | MELISSA MILLER GIBSON AND JAMES GIBSON | TH EXPLORATION, LLC | 1/8+ | 953 | 308 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10*14786 | E | 5-25-20 | TWILA ORA WHIPKEY | GASTAR EXPLORATION USA INC | 1/8+ | 799 | 61 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC | | | |
| 10*14792 | E | 5-25-20 | TIMOTHY YOHO | GASTAR EXPLORATION USA INC | 1/8+ | 799 | 536 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC | | | |
| 10*14795 | E | 5-25-20 | LARRY YOHO | GASTAR EXPLORATION USA INC | 1/8+ | 799 | 526 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC | | | |
| 10*14797 | E | 5-25-20 | ORVILLE YOUNG | GASTAR EXPLORATION USA INC | 1/8+ | 800 | 598 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC | | | |

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| 10*14798 | E | 5-25-20 | CECILIA D. NEWLAND | GASTAR EXPLORATION USA INC | 1/8+ | 800 | 609 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14800 | E | 5-25-20 | DAPHNE HUFFMAN & CHARLES HUFFM | GASTAR EXPLORATION USA INC | 1/8+ | 800 | 613 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14804 | E | 5-25-20 | DEBORAH K. & FRANK KLIMASZEWSK | GASTAR EXPLORATION USA INC | 1/8+ | 801 | 333 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14805 | E | 5-25-20 | HAROLD C. SIMMONS | GASTAR EXPLORATION USA INC | 1/8+ | 803 | 148 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14806 | E | 5-25-20 | DONNA VIVIAN YOHO | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 558 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14807 | E | 5-25-20 | JANICE N HAUDENSCHILT | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 555 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14808 | E | 5-25-20 | DANA MILICIA HUMPHREYS | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 552 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14809 | E | 5-25-20 | DEWEY A. MILICIA | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 549 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14810 | E | 5-25-20 | NICOLETTA MILICIA BLOODWORTH | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 546 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14811 | E | 5-25-20 | MARK YOHO AND MARY YOHO | GASTAR EXPLORATION USA INC | 1/8+ | 809 | 543 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14812 | E | 5-25-20 | DENISE ANN GALE | GASTAR EXPLORATION USA INC | 1/8+ | 815 | 224 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14813 | E | 5-25-20 | DEBRA JANE GALE | GASTAR EXPLORATION USA INC | 1/8+ | 818 | 568 | NA | NA | NA | NA | NA | 21/41 Gastar Exploration USA Inc to Gastar Exploration, Inc | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14814 | E | 5-25-20 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION USA INC | 1/8+ | 827 | 537 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14815 | E | 5-25-20 | CHESTNUT HOLDINGS INC | GASTAR EXPLORATION USA INC | 1/8+ | 827 | 535 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14822 | E | 5-25-20 | ONWARD E BURGE TRUST | GASTAR EXPLORATION USA INC | 1/8+ | 876 | 463 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14823 | E | 5-25-20 | SARAH L BURGE TRUST | GASTAR EXPLORATION USA INC | 1/8+ | 876 | 459 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |

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| 10*17195 | E | 5-25-20 | PATRICIA HARTMAN | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 317 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17196 | E | 5-25-20 | DELBERT R. MONTGOMERY | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 311 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17197 | E | 5-25-20 | GLORIA J. SIMMONS HAROLD SIMMONS | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 313 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17199 | E | 5-25-20 | PAMELA L DRAZIC AND JEFFREY DRAZIC | GASTAR EXPLORATION USA INC | 1/8+ | 695 | 315 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17200 | E | 5-25-20 | STEPHANIE L. HALL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 156 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17201 | E | 5-25-20 | DENISE A GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 395 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17202 | E | 5-25-20 | JANE GALE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 385 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17203 | E | 5-25-20 | BARRY RAY MOORE | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 387 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |

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| 10*17204 | E | 5-25-20 | CLARENCE RICHARD ZESIGER & MARY ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 391 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17206 | E | 5-25-20 | M VIRGINIA & EDWARD C MARSH | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 399 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17207 | E | 5-25-20 | DEBORAH K. KLIMASZEWSKI FRANK KLIMASZEWSKI, SR. | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 389 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17210 | E | 5-25-20 | MARILYN NOEL | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 393 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17211 | E | 5-25-20 | GARY WAYNE ZESIGER & VICKIE ZESIGER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 397 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17212 | E | 5-25-20 | DARRELL NEWLAND LYDIA NEWLAND | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 158 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*17213 | E | 5-25-20 | CAROL DEEN GARDNER | GASTAR EXPLORATION USA INC | 1/8+ | 697 | 154 | 23/353 Gastar Exploration USA Inc to Atinum Marcellus I, LLC | 27/311 Gastar Exploration USA, Inc and Atinum Marcellus I, LLC to Chesapeake Appalachia, LLC and Statoil USA Onshore Properties Inc | 33/110 Chesapeake Appalachia, LLC to SWN Production Company, LLC | 33/424 Statoil USA Onshore Properties Inc to SWN Exchange Title Holder LLC | 19/624 SWN Exchange Titleholder LLC to SWN Production Company, LLC | 41/238 Statoil USA Onshore Properties Inc to TH Exploration, LLC | 41/256 SWN Production Company, LLC to TH Exploration, LLC |
| 10*18275 | E | 5-25-20 | BETTY JEAN NEELY | TH EXPLORATION, LLC | 1/8+ | 929 | 60 | NA | NA | NA | NA | NA | NA | NA |
| 10*18366 | E | 5-25-20 | MARY LOU WILSON AND STANLEY D WILSON | TH EXPLORATION, LLC | 1/8+ | 931 | 311 | NA | NA | NA | NA | NA | NA | NA |
| 10*18369 | E | 5-25-20 | CRAIG ALAN YOHO AND DONNA M YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 303 | NA | NA | NA | NA | NA | NA | NA |
| 10*18370 | E | 5-25-20 | SAMUEL D YOHO | TH EXPLORATION, LLC | 1/8+ | 931 | 300 | NA | NA | NA | NA | NA | NA | NA |

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| 10*18379 | E | 5-25-20 | DAVID N DEVICK TRUSTEE OF THE TONI JO MASON LIVING TRUST | TH EXPLORATION, LLC | 1/8+ | 932 | 439 | NA | NA | NA | NA | NA | NA | NA |
| 10*19540 | E | 5-25-20 | ERICA M MASON | TH EXPLORATION, LLC | 1/8+ | 942 | 53 | NA | NA | NA | NA | NA | NA | NA |
| 10*19652 | E | 5-25-20 | JACK R HAMMERS | TH EXPLORATION, LLC | 1/8+ | 944 | 108 | NA | NA | NA | NA | NA | NA | NA |
| 10*19662 | E | 5-25-20 | CHESTNUT HOLDINGS INC | TH EXPLORATION, LLC | 1/8+ | 949 | 311 | NA | NA | NA | NA | NA | NA | NA |
| 10*19903 | E | 5-25-20 | PAUL F HAMMERS | TH EXPLORATION, LLC | 1/8+ | 948 | 236 | NA | NA | NA | NA | NA | NA | NA |
| 10*21179 | E | 5-25-20 | JACK R HAMMERS | TH EXPLORATION, LLC | 1/8+ | 952 | 188 | NA | NA | NA | NA | NA | NA | NA |
| 10*21180 | E | 5-25-20 | ANTOINE E GERAUD | TH EXPLORATION, LLC | 1/8+ | 952 | 192 | NA | NA | NA | NA | NA | NA | NA |
| 10*21183 | E | 5-25-20 | DONALD R NEWLAND AND SUZANNE NEWLAND | TH EXPLORATION, LLC | 1/8+ | 952 | 205 | NA | NA | NA | NA | NA | NA | NA |
| 10*21241 | E | 5-25-20 | DARRELL NEWLAND | TH EXPLORATION, LLC | 1/8+ | 952 | 636 | NA | NA | NA | NA | NA | NA | NA |
| 10*21315 | E | 5-25-20 | CLAUDIA LOWERY MALLOY | TH EXPLORATION, LLC | 1/8+ | 953 | 302 | NA | NA | NA | NA | NA | NA | NA |
| 10*21316 | E | 5-25-20 | JAMES MICHAEL YOHO | TH EXPLORATION, LLC | 1/8+ | 953 | 300 | NA | NA | NA | NA | NA | NA | NA |
| 10*21317 | E | 5-25-20 | BRADFORD D LOWERY & DEBORAH BRADFORD | TH EXPLORATION, LLC | 1/8+ | 953 | 297 | NA | NA | NA | NA | NA | NA | NA |
| 10*21383 | E | 5-25-20 | JANET LEE SPARKS | TH EXPLORATION, LLC | 1/8+ | 957 | 27 | NA | NA | NA | NA | NA | NA | NA |
| 10*21419 | E | 5-25-20 | DAPHNE HUFFMAN AND CHARLES HUFFMAN | TH EXPLORATION, LLC | 1/8+ | 957 | 59 | NA | NA | NA | NA | NA | NA | NA |
| 10*21431 | E | 5-25-20 | GARY WAYNE ZESIGER & VICKIE ZESIGER | TH EXPLORATION, LLC | 1/8+ | 957 | 57 | NA | NA | NA | NA | NA | NA | NA |
| 10*21436 | E | 5-25-20 | CECILIA D NEWLAND | TH EXPLORATION, LLC | 1/8+ | 957 | 55 | NA | NA | NA | NA | NA | NA | NA |
| 10*21439 | E | 5-25-20 | M VIRGINIA & EDWARD C MARSH | TH EXPLORATION, LLC | 1/8+ | 957 | 53 | NA | NA | NA | NA | NA | NA | NA |
| 10*21456 | E | 5-25-20 | TONI JO MASON LIVING TRUST | TH EXPLORATION, LLC | 1/8+ | 953 | 540 | NA | NA | NA | NA | NA | NA | NA |
| 10*21469 | E | 5-25-20 | KIMBERLY S DENNY AND JAMES E DENNY | TH EXPLORATION, LLC | 1/8+ | 957 | 244 | NA | NA | NA | NA | NA | NA | NA |
| 10*21471 | E | 5-25-20 | RICHARD ROSS WILSON | TH EXPLORATION, LLC | 1/8+ | 960 | 190 | NA | NA | NA | NA | NA | NA | NA |
| 10*21620 | E | 5-25-20 | ROBERT CRAIG MONTGOMERY AND CYNTHIA R MONTGOMERY | TH EXPLORATION, LLC | 1/8+ | 959 | 496 | NA | NA | NA | NA | NA | NA | NA |
| 10*21621 | E | 5-25-20 | MARILYN NOEL | TH EXPLORATION, LLC | 1/8+ | 959 | 494 | NA | NA | NA | NA | NA | NA | NA |
| 10*21658 | E | 5-25-20 | CLARENCE RICHARD ZESIGER & MARY ZESIGER | TH EXPLORATION, LLC | 1/8+ | 959 | 490 | NA | NA | NA | NA | NA | NA | NA |
| 10*21659 | E | 5-25-20 | DEBORAH BLOUGH | TH EXPLORATION, LLC | 1/8+ | 958 | 392 | NA | NA | NA | NA | NA | NA | NA |
| 10*21660 | E | 5-25-20 | PAMELA L DRAZIC AND JEFFREY DRAZIC | TH EXPLORATION, LLC | 1/8+ | 958 | 390 | NA | NA | NA | NA | NA | NA | NA |
| 10*21830 | E | 5-25-20 | MARISSA MASON | TH EXPLORATION, LLC | 1/8+ | 960 | 200 | NA | NA | NA | NA | NA | NA | NA |
| 10*21831 | E | 5-25-20 | MATTHEW MASON | TH EXPLORATION, LLC | 1/8+ | 966 | 122 | NA | NA | NA | NA | NA | NA | NA |
| 10*21834 | E | 5-25-20 | GEORGE DANIEL KRUGER | TH EXPLORATION, LLC | 1/8+ | 960 | 204 | NA | NA | NA | NA | NA | NA | NA |
| 10*21947 | E | 5-25-20 | WALLACE LYNN WENDEL | TH EXPLORATION, LLC | 1/8+ | 965 | 59 | NA | NA | NA | NA | NA | NA | NA |

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| 10*21988 | E | 5-25-20 | ERICA M MASON | TH EXPLORATION, LLC | 1/8+ | 960 | 552 | NA | NA | NA | NA | NA | NA | NA |
| 10*22007 | E | 5-25-20 | DEBORAH K KLIMASZEWSKI AND FRANK KLIMASZEWSKI | TH EXPLORATION, LLC | 1/8+ | 959 | 492 | NA | NA | NA | NA | NA | NA | NA |
| 10*22008 | E | 5-25-20 | COLIN R YOHO | TH EXPLORATION, LLC | 1/8+ | 953 | 304 | NA | NA | NA | NA | NA | NA | NA |
| 10*22008 | E | 5-25-20 | COLIN R YOHO | TH EXPLORATION, LLC | 1/8+ | 953 | 304 | NA | NA | NA | NA | NA | NA | NA |
| 10*22009 | E | 5-25-20 | MARGARET F RICHMOND | TH EXPLORATION, LLC | 1/8+ | 954 | 626 | NA | NA | NA | NA | NA | NA | NA |
| 10*22010 | E | 5-25-20 | ROBERT I BONAR SR | TH EXPLORATION, LLC | 1/8+ | 954 | 624 | NA | NA | NA | NA | NA | NA | NA |
| 10*22011 | E | 5-25-20 | BARBARA ANN MAYNARD | TH EXPLORATION, LLC | 1/8+ | 954 | 628 | NA | NA | NA | NA | NA | NA | NA |
| 10*22012 | E | 5-25-20 | PAUL F HAMMER | TH EXPLORATION, LLC | 1/8+ | 954 | 622 | NA | NA | NA | NA | NA | NA | NA |
| 10*22025 | E | 5-25-20 | MARK & MARY YOHO | TH EXPLORATION, LLC | 1/8+ | 960 | 544 | NA | NA | NA | NA | NA | NA | NA |
| 10*22025 | E | 5-25-20 | MARK & MARY YOHO | TH EXPLORATION, LLC | 1/8+ | 960 | 544 | NA | NA | NA | NA | NA | NA | NA |
| 10*22031 | E | 5-25-20 | PHILLIP YOHO AND PATRICIA YOHO | TH EXPLORATION, LLC | 1/8+ | 960 | 535 | NA | NA | NA | NA | NA | NA | NA |
| 10*22032 | E | 5-25-20 | JOANNE E RAY | TH EXPLORATION, LLC | 1/8+ | 960 | 537 | NA | NA | NA | NA | NA | NA | NA |
| 10*22106 | E | 5-25-20 | BARRY RAY MOORE | TH EXPLORATION, LLC | 1/8+ | 954 | 643 | NA | NA | NA | NA | NA | NA | NA |
| 10*22129 | E | 5-25-20 | JANICE N HAUDENSCHILT | TH EXPLORATION, LLC | 1/8+ | 961 | 459 | NA | NA | NA | NA | NA | NA | NA |
| 10*22129 | E | 5-25-20 | JANICE N HAUDENSCHILT | TH EXPLORATION, LLC | 1/8+ | 961 | 459 | NA | NA | NA | NA | NA | NA | NA |
| 10*22137 | E | 5-25-20 | CONNIE L NEELY | TH EXPLORATION, LLC | 1/8+ | 961 | 466 | NA | NA | NA | NA | NA | NA | NA |
| 10*22152 | E | 5-25-20 | PAUL F HAMMERS | TH EXPLORATION, LLC | 1/8+ | 954 | 622 | NA | NA | NA | NA | NA | NA | NA |
| 10*22285 | E | 5-25-20 | DONALD JAMES WILSON AND SANDY L WILSON | TH EXPLORATION, LLC | 1/8+ | 962 | 193 | NA | NA | NA | NA | NA | NA | NA |
| 10*22334 | E | 5-25-20 | JOHN BRYANT | TH EXPLORATION, LLC | 1/8+ | 962 | 540 | NA | NA | NA | NA | NA | NA | NA |
| 10*22441 | E | 5-25-20 | APRIL ROSE POSTLETHWAIT | TH EXPLORATION, LLC | 1/8+ | 963 | 646 | NA | NA | NA | NA | NA | NA | NA |
| 10*22510 | E | 5-25-20 | DONNA YOHO | TH EXPLORATION, LLC | 1/8+ | 964 | 432 | NA | NA | NA | NA | NA | NA | NA |
| 10*22561 | E | 5-25-20 | MARY ROSE YOHO | TH EXPLORATION, LLC | 1/8+ | 968 | 200 | NA | NA | NA | NA | NA | NA | NA |
| 10*22562 | E | 5-25-20 | HAROLD C SIMMONS | TH EXPLORATION, LLC | 1/8+ | 966 | 100 | NA | NA | NA | NA | NA | NA | NA |
| 10*22563 | E | 5-25-20 | KIMBERLY D STRAUCH | TH EXPLORATION, LLC | 1/8+ | 966 | 522 | NA | NA | NA | NA | NA | NA | NA |
| 10*22718 | E | 5-25-20 | WILLIAM R RICHMOND AND CONNIE S RICHMOND | TH EXPLORATION, LLC | 1/8+ | 963 | 389 | NA | NA | NA | NA | NA | NA | NA |
| 10*14728 | F | 5-25-1 | IRIS K MOELLENDICK | GASTAR EXPLORATION INC | 1/8+ | 839 | 509 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14729 | F | 5-25-1 | BONNIE S SHANNON | GASTAR EXPLORATION INC | 1/8+ | 839 | 511 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14730 | F | 5-25-1 | CATHIE K LAKE | GASTAR EXPLORATION INC | 1/8+ | 839 | 513 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14731 | F | 5-25-1 | RICHARD KLUG | GASTAR EXPLORATION INC | 1/8+ | 839 | 515 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |

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WV Department of Environmental Protection

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|----------|---|----------|-----------------------------------|---------------------------|------|-----|-----|----|----|----|----|----|----|--|
| 10*14734 | F | 5-25-1 | CLARENCE BAXTER, BY RODNEY BAX | GASTAR EXPLORATION INC | 1/8+ | 842 | 376 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14735 | F | 5-25-1 | GLENNALEE COZART | GASTAR EXPLORATION INC | 1/8+ | 842 | 378 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14737 | F | 5-25-1 | MARION PARSONS JR | GASTAR EXPLORATION INC | 1/8+ | 844 | 83 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*19914 | F | 5-25-1 | MICHAEL L MASON | TH EXPLORATION, LLC | 1/8+ | 945 | 436 | NA | NA | NA | NA | NA | NA | NA |
| 10*14728 | G | 5-25-13 | IRIS K MOELLENDICK | GASTAR EXPLORATION INC | 1/8+ | 839 | 509 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14729 | G | 5-25-13 | BONNIE S SHANNON | GASTAR EXPLORATION INC | 1/8+ | 839 | 511 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14730 | G | 5-25-13 | CATHIE K LAKE | GASTAR EXPLORATION INC | 1/8+ | 839 | 513 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14733 | G | 5-25-13 | NICHOLAS J KLUG AND DEBRA L KL | GASTAR EXPLORATION INC | 1/8+ | 842 | 374 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14734 | G | 5-25-13 | CLARENCE BAXTER, BY RODNEY BAX | GASTAR EXPLORATION INC | 1/8+ | 842 | 376 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14735 | G | 5-25-13 | GLENNALEE COZART | GASTAR EXPLORATION INC | 1/8+ | 842 | 378 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14737 | G | 5-25-13 | MARION PARSONS JR | GASTAR EXPLORATION INC | 1/8+ | 844 | 83 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14728 | H | 5-25-1.5 | IRIS K MOELLENDICK | GASTAR EXPLORATION INC | 1/8+ | 839 | 509 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14729 | H | 5-25-1.5 | BONNIE S SHANNON | GASTAR EXPLORATION INC | 1/8+ | 839 | 511 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14730 | H | 5-25-1.5 | CATHIE K LAKE | GASTAR EXPLORATION INC | 1/8+ | 839 | 513 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14731 | H | 5-25-1.5 | RICHARD KLUG | GASTAR EXPLORATION INC | 1/8+ | 839 | 515 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14734 | H | 5-25-1.5 | CLARENCE BAXTER, BY RODNEY BAX | GASTAR EXPLORATION INC | 1/8+ | 842 | 376 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14735 | H | 5-25-1.5 | GLENNALEE COZART | GASTAR EXPLORATION INC | 1/8+ | 842 | 378 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14737 | H | 5-25-1.5 | MARION PARSONS JR | GASTAR EXPLORATION INC | 1/8+ | 844 | 83 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |

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|----------|---|-----------|---|------------------------|------|-----|-----|----|----|----|----|----|----|---|
| 10*14913 | H | 5-25-1.5 | RYAN BRATTON | GASTAR EXPLORATION INC | 1/8+ | 827 | 284 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*18120 | I | 5-25-12.1 | KENT & BETTY MASON | TH EXPLORATION, LLC | 1/8+ | 927 | 75 | NA | NA | NA | NA | NA | NA | NA |
| 10*14926 | J | 5-25-12 | NILA JUNE MASON | GASTAR EXPLORATION INC | 1/8+ | 842 | 394 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*14927 | J | 5-25-12 | MARION PARSONS JR | GASTAR EXPLORATION INC | 1/8+ | 842 | 396 | NA | NA | NA | NA | NA | NA | 36/9 Gastar Exploration, Inc. to TH Exploration II, LLC |
| 10*18535 | J | 5-25-12 | WILLAJEAN NEVA HORES AND DONALD HORES | TH EXPLORATION, LLC | 1/8+ | 933 | 639 | NA | NA | NA | NA | NA | NA | NA |
| 10*18536 | J | 5-25-12 | MIRIAM D LYDICK | TH EXPLORATION, LLC | 1/8+ | 933 | 637 | NA | NA | NA | NA | NA | NA | NA |
| 10*18599 | J | 5-25-12 | JANICE F BROOKOVER | TH EXPLORATION, LLC | 1/8+ | 935 | 56 | NA | NA | NA | NA | NA | NA | NA |
| 10*18600 | J | 5-25-12 | KATHLEEN I FRANCIS | TH EXPLORATION, LLC | 1/8+ | 935 | 58 | NA | NA | NA | NA | NA | NA | NA |
| 10*18601 | J | 5-25-12 | BARBARA BARNHART AND WALTER BARNHART | TH EXPLORATION, LLC | 1/8+ | 935 | 60 | NA | NA | NA | NA | NA | NA | NA |
| 10*18602 | J | 5-25-12 | JEANETTE M HEATH | TH EXPLORATION, LLC | 1/8+ | 935 | 62 | NA | NA | NA | NA | NA | NA | NA |
| 10*18603 | J | 5-25-12 | ARELENA B HORNER AND QUAY ALLEN HORNER | TH EXPLORATION, LLC | 1/8+ | 935 | 64 | NA | NA | NA | NA | NA | NA | NA |
| 10*18604 | J | 5-25-12 | SARA JANE RINEHART AND JAMES RINEHART | TH EXPLORATION, LLC | 1/8+ | 935 | 66 | NA | NA | NA | NA | NA | NA | NA |
| 10*18690 | J | 5-25-12 | S RICHARD MELLON | TH EXPLORATION, LLC | 1/8+ | 936 | 89 | NA | NA | NA | NA | NA | NA | NA |
| 10*18691 | J | 5-25-12 | MADLYN E MOSSOR DO NOT USE | TH EXPLORATION, LLC | 1/8+ | 936 | 126 | NA | NA | NA | NA | NA | NA | NA |
| 10*18746 | J | 5-25-12 | ELSIE KAREN PADGELEK | TH EXPLORATION, LLC | 1/8+ | 938 | 456 | NA | NA | NA | NA | NA | NA | NA |
| 10*18815 | J | 5-25-12 | GEORGE CUMBERLEDGE | TH EXPLORATION, LLC | 1/8+ | 938 | 30 | NA | NA | NA | NA | NA | NA | NA |
| 10*18995 | J | 5-25-12 | THOMAS JACOB BELL | TH EXPLORATION, LLC | 1/8+ | 940 | 135 | NA | NA | NA | NA | NA | NA | NA |
| 10*18996 | J | 5-25-12 | CHARLES R PARSONS AND LINDA R PARSONS | TH EXPLORATION, LLC | 1/8+ | 940 | 141 | NA | NA | NA | NA | NA | NA | NA |
| 10*19389 | J | 5-25-12 | MICHELLE E OVERALL AND JAMES E OVERALL | TH EXPLORATION, LLC | 1/8+ | 940 | 268 | NA | NA | NA | NA | NA | NA | NA |
| 10*19541 | J | 5-25-12 | CHERYL RIDGELY | TH EXPLORATION, LLC | 1/8+ | 941 | 645 | NA | NA | NA | NA | NA | NA | NA |
| 10*19651 | J | 5-25-12 | CAROL JUNE MILLER | TH EXPLORATION, LLC | 1/8+ | 944 | 95 | NA | NA | NA | NA | NA | NA | NA |
| 10*19895 | J | 5-25-12 | DAVID BELL | TH EXPLORATION, LLC | 1/8+ | 948 | 589 | NA | NA | NA | NA | NA | NA | NA |
| 10*19896 | J | 5-25-12 | ISABEL GEORGE AND HENSLEY J GEORGE | TH EXPLORATION, LLC | 1/8+ | 949 | 231 | NA | NA | NA | NA | NA | NA | NA |
| 10*19897 | J | 5-25-12 | ROSE BELL | TH EXPLORATION, LLC | 1/8+ | 949 | 223 | NA | NA | NA | NA | NA | NA | NA |
| 10*19898 | J | 5-25-12 | NANCY J TODD | TH EXPLORATION, LLC | 1/8+ | 949 | 226 | NA | NA | NA | NA | NA | NA | NA |
| 10*19899 | J | 5-25-12 | WILLIAM H BELL | TH EXPLORATION, LLC | 1/8+ | 948 | 228 | NA | NA | NA | NA | NA | NA | NA |
| 10*19965 | J | 5-25-12 | HARRY R BELL | TH EXPLORATION, LLC | 1/8+ | 948 | 221 | NA | NA | NA | NA | NA | NA | NA |
| 10*19969 | J | 5-25-12 | MATTHEW E WEAR AND LEIGH ANN WEAR | TH EXPLORATION, LLC | 1/8+ | 948 | 232 | NA | NA | NA | NA | NA | NA | NA |
| 10*21128 | J | 5-25-12 | BARBARA J CONWAY AND JAMES G CONWAY | TH EXPLORATION, LLC | 1/8+ | 952 | 218 | NA | NA | NA | NA | NA | NA | NA |
| 10*22193 | J | 5-25-12 | CAROLE PARSONS | TH EXPLORATION, LLC | 1/8+ | 952 | 625 | NA | NA | NA | NA | NA | NA | NA |
| 10*22331 | J | 5-25-12 | TIMOTHY J CAROLL AND KATHLEEN A CARROLL | TH EXPLORATION, LLC | 1/8+ | 957 | 472 | NA | NA | NA | NA | NA | NA | NA |

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Operator's Well No. Hillrock - 9HM

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|----------|---|-----------|--------------------|---------------------------------|------|-----|-----|----|----|----|----|----|----|--|
| 10*22454 | J | 5-25-12 | NANCY ELAINE BELL | TH EXPLORATION, LLC | 1/8+ | 958 | 385 | NA | NA | NA | NA | NA | NA | NA |
| 10*22841 | J | 5-25-12 | AARON PATRICK WEAR | TH EXPLORATION, LLC | 1/8+ | 962 | 313 | NA | NA | NA | NA | NA | NA | NA |
| 10*22983 | J | 5-25-12 | SEAN MICHAEL WEAR | TH EXPLORATION, LLC | 1/8+ | 962 | 318 | NA | NA | NA | NA | NA | NA | NA |
| 10*22496 | K | 5-25-11.2 | JAMES W KLUG | AMERICAN PETROLEUM PARTNERS LLC | 1/8+ | 923 | 543 | NA | NA | NA | NA | NA | NA | 42/109 American Petroleum Partners Operating, LLC to TH Exploration, LLC |

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STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

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Jan Pest
MARSHALL County 03:44:28 PM
Instrument No 1416299
Date Recorded 10/19/2016
Document Type NTS
Pages Recorded 1
Book-Page 29-62
Recording Fee \$5.00
Additional \$6.00

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

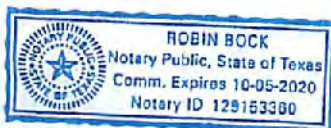
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: 10-05-2020

Signature/Notary Public: Robin Bock

Name/Notary Public (Print): Robin Bock



Jan Post
MARSHALL County 01:22:38 PM
Instrument No 1403489
Date Recorded 04/27/2016
Document Type ASB
Pages Recorded 77
Book-Page 36-9
Recording Fee \$77.00
Additional \$13.00

WHEN RECORDED RETURN TO:
TE Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kabis

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
COUNTY OF MARSHALL § KNOW ALL MEN BY THESE PRESENTS:
§

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gastar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TE Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (c) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests"):

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzel, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described

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WV Department of
Environmental Protection

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 18, 2017 (the "*Effective Date*"). Assignor and Assignee may be referred to herein collectively as the "*Parties*," or individually as a "*Party*." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated August 24, 2017 (the "*Acreage Trade Agreement*").

ARTICLE 1 ASSIGNMENT OF ASSETS

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "*Leases*") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

ARTICLE 2 SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (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 December 12, 2017 (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", 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.

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

Marshall County
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Instrument 1440860
05/25/2018 @ 02:36:09 PM
ASSIGNMENTS
Book 42 @ Page 109
Pages Recorded 9
Recording Cost \$ 15.00

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June 29, 2018

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

RE: Hillrock 9HM

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Hillrock 9HM well plat.

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

Sincerely,

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

Amy L. Miller
Permitting Specialist – Appalachia Region

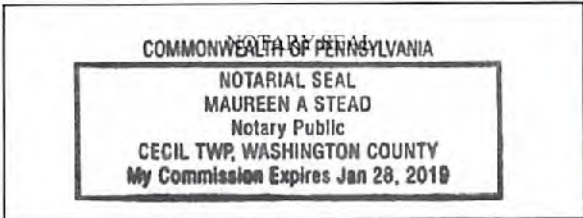
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WV Department of
Environmental Protection

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: Tug Hill Operating, LLC
By: Amy L. Miller *Amy Miller*
Its: Permitting Specialist
Telephone: 724-749-8388

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amiller@tug-hillop.com



Subscribed and sworn before me this 29 day of JUNE 2018.
Maureen A Stead Notary Public
My Commission Expires 1/28/19

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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JUL 2 2018
WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47- 051 -
OPERATOR WELL NO. Hillrock 9HM
Well Pad Name: Simms

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: 6/21/2018 Date Permit Application Filed: 6/22/2018

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: Terry and Deborah Simms (Access Road and Well Pad)
 Address: 7175 Rines Ridge Road
Proctor, WV 26055
 Name: Kenneth and Nadine Corley (Access Road)
 Address: 7059 Rines Ridge Road
Proctor, WV 26055

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: _____
 Address: _____
 Name: _____
 Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
 Name: _____
 Address: _____

COAL OWNER OR LESSEE
 Name: CNX Land Attn: Casey Saunders
 Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

COAL OPERATOR
 Name: _____
 Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
 Name: See attached list
 Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
 Name: _____
 Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas
JUL 2 2018
WV Department of Environmental Protection

WW-6A
(8-13)

JUL 2 2018

API NO. 47-051
OPERATOR WELL NO. Hillrock 3HM
Well Pad Name: SimmsWV 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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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 - _____
OPERATOR WELL NO. Hillrock 9HM
Well Pad Name: Simms

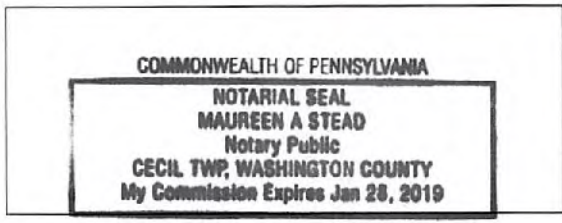
Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, 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 21 day of JUNE 2018
Maureen A Stead Notary Public
My Commission Expires 1/28/19

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JUL 2 2018
WV Department of
Environmental Protection

JUL 2 2018

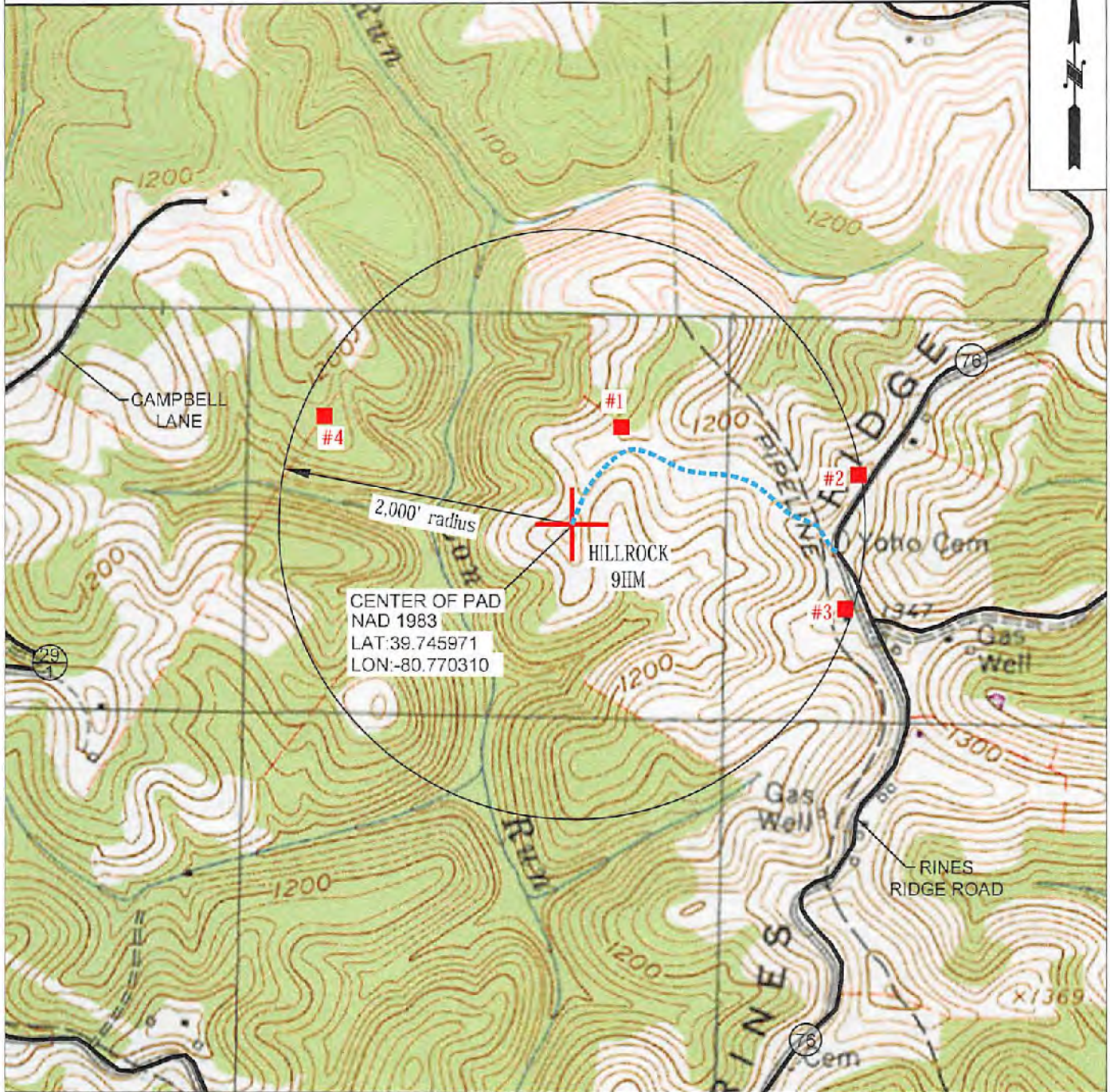
WW-6A

WV Department of
Environmental Protection

PROPOSED HILLROCK 9HM

SUPPLEMENT PG 1

There appears to be Four (4) possible water sources within 2,000'.



2,000' radius
HILLROCK 9HM
CENTER OF PAD
NAD 1983
LAT: 39.745971
LON: -80.770310



| | | | |
|--|-----------|-----------------------|------------|
| OPERATOR | 494510851 | TOPO SECTION | LEASE NAME |
| TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317 | | NEW MARTINSVILLE 7.5' | HILLROCK |
| SCALE: | | DATE: | |
| 1" = 1000' | | DATE: 06-11-2018 | |

Tug Hill Operating, LLC
380 Southpointe BLVD, Suite 200
Canonsburg, PA 15317

WATER WELL REPORT

Well: HILLROCK 9HM
District: Franklin
County: Marshall
State: WV

There appears to be Four (4) possible water sources within 2,000 feet of the above referenced well location.

| | | |
|--|--|--|
| Topo Spot #1 TM 17 Par.11 Kenneth N. Corley et ux 304-455-4983 7069 Rines Ridge Rd. Proctor, WV 26055 | Topo spot #2 TM 17 Par.11 Kenneth N. & Deborah Corley 304-455-5670(H), 304-455-3844(C) 7069 Rines Ridge Rd. Proctor, WV 26055 | Topo spot #3 TM 23 Par.7 Terry E. & Deborah Simms 304-455-1439 7175 Rines Ridge Rd. Proctor, WV 26055 |
| Topo Spot #4 TM 23 Par.6 James A. Channing, et al 304-797-0119 c/o James Channing 3954 Clarimont Pl. Weirton, WV 26026 | | |

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Environmental Protection

WW-6A3
(1/12)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 5/2/2018 **Date of Planned Entry:** 5/9/2018

Delivery method pursuant to West Virginia Code § 22-6A-10a

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

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)
Name: Kenneth and Nadine Corley (Access Road)
Address: 7069 Rines Ridge Road
Proctor, WV 26055
Name: Terry and Deborah Simms (Access Road and Well Pad)
Address: 7175 Rines Ridge Road
Proctor, WV 26055
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: CNX Land Attn: Casey Saunders
Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)
Name: Terry and Deborah L. Simms
Address: 7175 Rines Ridge Road
Proctor, WV 26055

*please attach additional forms if necessary

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JUL 2 2018

WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

| | | | |
|-------------|------------------------------|-------------------------------|---|
| State: | <u>West Virginia</u> | Approx. Latitude & Longitude: | <u>39.7459021; -80.7702658</u> |
| County: | <u>Marshall</u> | Public Road Access: | <u>Rines Ridge Road (County Route 76)</u> |
| District: | <u>Franklin</u> | Watershed: | <u>Fish Creek (HUC 10)</u> |
| Quadrangle: | <u>New Martinsville 7.5'</u> | Generally used farm name: | <u>Simms, Terry E. and Deborah</u> |

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production 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). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, 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.

WW-6A5
(1/12)

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:** 06/29/2018**Date Permit Application Filed:** 06/29/2018RECEIVED
Office of Oil and Gas

JUL 2 2018

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

WV Department of
Environmental Protection

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: Kenneth and Nadine Corley (Access Road)Address: 7069 Rines Ridge RoadProctor, WV 26055Name: Terry and Deborah Simms (Access Road and Well Pad)Address: 7175 Rines Ridge RoadProctor, WV 26055**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>519,682.55</u> |
| County: | <u>Marshall</u> | | Northing: | <u>4,399,595.41</u> |
| District: | <u>Franklin</u> | Public Road Access: | <u>Rines Ridge Road (County Route 76)</u> | |
| Quadrangle: | <u>New Martinsville 7.5'</u> | Generally used farm name: | <u>Simms, Terry E. and Deborah</u> | |
| Watershed: | <u>Fish Creek (HUC 10)</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, LLCTelephone: 724-749-8388Email: amiller@tug-hillcop.comAddress: 380 Southpointe Boulevard, Plaza II, Suite 200Canonsburg, PA 15317Facsimile: 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.



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

May 16, 2018

Jill M. Newman
 Deputy Commissioner

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

Subject: DOH Permits for the Simms Well Pad, Marshall County
 Hillrock 9HM Well

Dear Mr. Martin,

This well site will be accessed from Permit #06-2011-0123 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 76 SLS.

The operator has signed a DISTRICT WIDE 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
 CH, OM, D-6
 File

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 Office of Oil and Gas

JUL 2 2018

WV Department of
 Environmental Protection



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Hillrock 4HM

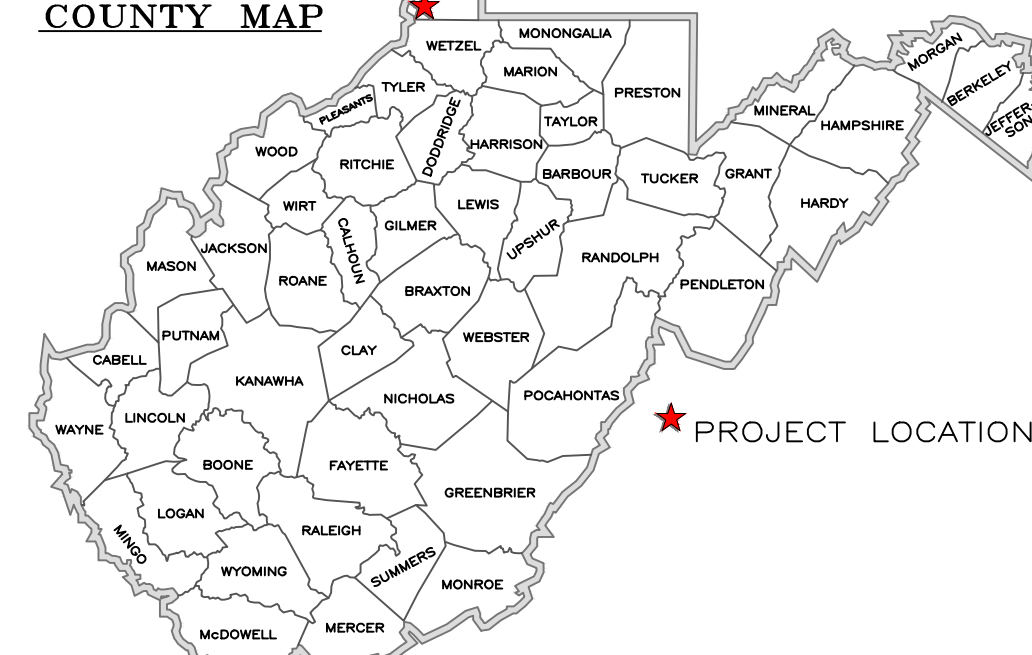
| PRODUCT NAME: | CHEMICAL DESCRIPTION: | PRODUCT USE: | HAZARDOUS COMPONENT: |
|---------------|----------------------------------|------------------|--|
| GBW-20C | Hemicellulase Breaker | Breaker - Water | None |
| ALPHA 1427 | | Biocide | Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride 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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JUL 2 2018

WV Department of
Environmental Protection

WEST VIRGINIA COUNTY MAP



**WVDEP OOG
ACCEPTED AS-BUILT**

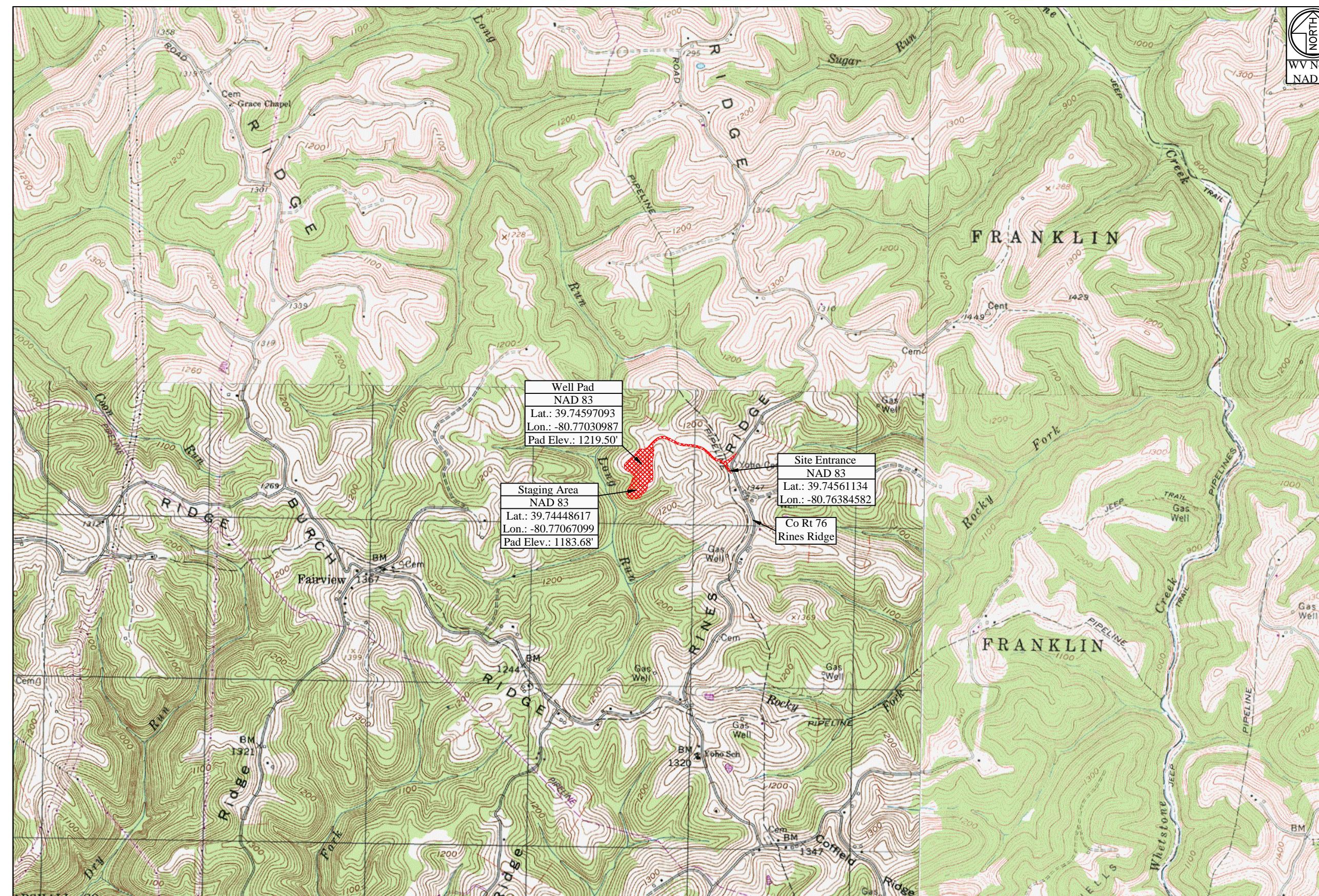
WJ 7/3/2018

Simms Well Site
Site Design, Construction Plan, &
Erosion and Sediment Control Plans
Tug Hill Operating
Marshall County
Franklin District
Latitude 39.74597093°
Longitude -80.77030987°
Lower Fish Creek Watershed

Pertinent Site Information
Simms Well Site
Emergency Number: 304-845-1920
Franklin District, Marshall County, WV
Watershed: Lower Fish Creek Watershed
Tug Hill Contact Number: 1-817-632-3400

| Property Owner Information - Simms Well Site | | | | | | |
|--|-------------|-------------|-------------|-------------|----------------|---------------|
| Franklin District - Marshall County | | | | | | |
| Owner | TM - Parcel | Well Pad | Staging | Access Road | Topsoil/Excess | Add. Clearing |
| Kenneth Corley et ux | 17-11 | 0.00 | 0.00 | 0.67 | 0.00 | 0.64 |
| Terry Simms et ux | 23-7 | 3.19 | 1.34 | 0.66 | 0.24 | 4.87 |
| Site Totals (Ac) | | 3.19 | 1.34 | 1.33 | 0.24 | 5.51 |
| | | | | | | 11.61 |

Exhibit A: Final Design: Issue for Permitting



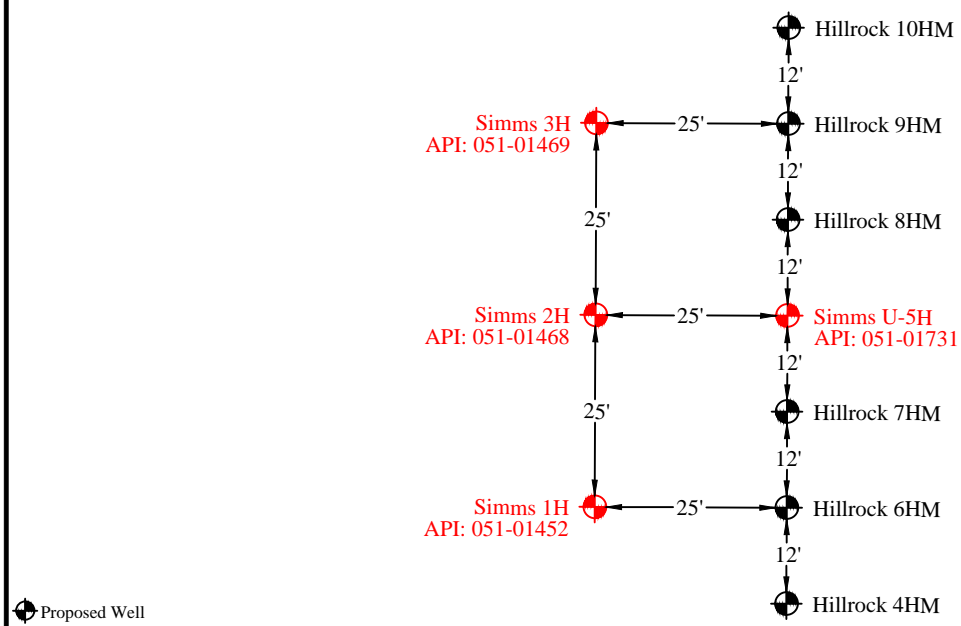
WV State Plane Coordinate System
North Zone, NAD 83
Elevations Based on NAV88
Established By Survey Grade GPS
and OPUS Post-Processing

| Access Road | | | |
|----------------------|-------------|-------------|------------------------------|
| Surface Owner | TM - Parcel | Road Length | Type |
| Kenneth Corley et ux | 17-11 | 1,258.30' | New Access Road Construction |
| Terry Simms et ux | 23-7 | 1,267.30' | New Access Road Construction |

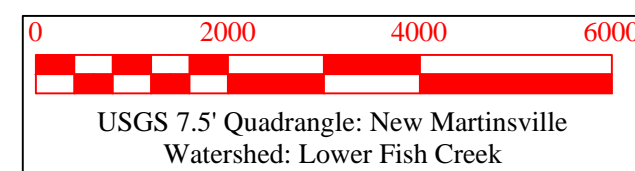
| Disturbed Area | |
|----------------------------------|-----------|
| Well Pad Construction | 3.19 Ac |
| Staging Area Construction | 1.34 Ac |
| Access Road Construction | 1.33 Ac |
| Topsoil / Excess Material | 0.24 Ac |
| Additional Clearing | 5.51 Ac |
| Total Disturbed Area | 11.61 Ac |
| Additional Information | |
| Total Wasted Acres Disturbed | 0.00 Ac |
| Total Linear Feet of Access Road | 2,525.60' |

| Simms Well Site Quantities | | | | | |
|-----------------------------------|-----------------|------------------|---------------------------|------------------|-------------------------|
| Description | Cut (CY) | Fill (CY) | Spoil (CY) | Max. Slope | Length of Slope |
| Well Pad Grading | 586.75 | 5,998.13 | 5,411.38 | N/A | N/A |
| Access Road Mountable Berm | 0.89 | 255.00 | 254.11 | 17.12% | 58.42' |
| Staging Area | 7,237.57 | 2,239.23 | 4,998.34 | N/A | N/A |
| Staging Area Access Road | 152.50 | 709.44 | 556.94 | 12.00% | 319.31' |
| Topsoil/Excess Material Stockpile | 0.00 | 2,007.36 | 2,007.36 | N/A | N/A |
| Totals | 7,977.71 | 11,209.16 | 4,998.34 | 8,229.79 | |
| | | | Total Spoil (CY) = | -3,231.45 | (Excess Spoil Capacity) |

| Site Entrance | Center of Well Pad | Center of Staging Area |
|---|--|--|
| WV-N NAD 83 N: 456189.29 WV-N NAD 83 E: 1613138.72 WV-N NAD 27 N: 456153.02 WV-N NAD 27 E: 1644576.34 Lat. NAD 83: 39.74561134 Lon. NAD 83: -80.76384582 Lat. NAD 27: 39.74553174 Lon. NAD 27: -80.76403226 UTM 17 NAD 83 N: 4399549.85 UTM 17 NAD 83 E: 520232.66 | WV-N NAD 83 N: 456345.89 WV-N NAD 83 E: 1611323.16 WV-N NAD 27 N: 456399.67 WV-N NAD 27 E: 1642760.82 Lat. NAD 83: 39.74597093 Lon. NAD 83: -80.77030987 Lat. NAD 27: 39.74589345 Lon. NAD 27: -80.77049703 UTM 17 NAD 83 N: 4399588.32 UTM 17 NAD 83 E: 519678.75 Pad Elev.: 1219.50' | WV-N NAD 83 N: 458906.56 WV-N NAD 83 E: 1611213.98 WV-N NAD 27 N: 455770.34 WV-N NAD 27 E: 1642631.66 Lat. NAD 83: 39.74448617 Lon. NAD 83: -80.77067099 Lat. NAD 27: 39.74448668 Lon. NAD 27: -80.77085805 UTM 17 NAD 83 N: 4399423.45 UTM 17 NAD 83 E: 519648.25 Pad Elev.: 1183.68' |



| Well Table | | | |
|---|---|---|---|
| Simms 1H | Simms 2H | Simms 3H | Simms U-5H |
| WV-N NAD 83 N: 456320.03 WV-N NAD 83 E: 1611310.62 WV-N NAD 27 N: 456283.80 WV-N NAD 27 E: 1642748.27 Lat. NAD 83: 39.74589944 Lon. NAD 83: -80.77055318 Lat. NAD 27: 39.74582196 Lon. NAD 27: -80.77054033 UTM 17 NAD 83 (m) N: 4399580.37 UTM 17 NAD 83 (m) E: 519675.06 | WV-N NAD 83 N: 456345.42 WV-N NAD 83 E: 1611310.85 WV-N NAD 27 N: 456309.19 WV-N NAD 27 E: 1642748.47 Lat. NAD 83: 39.74596914 Lon. NAD 83: -80.77053362 Lat. NAD 27: 39.74589166 Lon. NAD 27: -80.77054078 UTM 17 NAD 83 (m) N: 4399588.17 UTM 17 NAD 83 (m) E: 519675.00 | WV-N NAD 83 N: 456370.02 WV-N NAD 83 E: 1611310.81 WV-N NAD 27 N: 456333.79 WV-N NAD 27 E: 1642748.47 Lat. NAD 83: 39.74603667 Lon. NAD 83: -80.77055000 Lat. NAD 27: 39.74595919 Lon. NAD 27: -80.77054216 UTM 17 NAD 83 (m) N: 4399595.60 UTM 17 NAD 83 (m) E: 519674.86 | WV-N NAD 83 N: 456344.95 WV-N NAD 83 E: 1611335.95 WV-N NAD 27 N: 456308.73 WV-N NAD 27 E: 1642773.61 Lat. NAD 83: 39.74599884 Lon. NAD 83: -80.77026434 Lat. NAD 27: 39.74589136 Lon. NAD 27: -80.77051569 UTM 17 NAD 83 (m) N: 4399591.59 UTM 17 NAD 83 (m) E: 519682.09 |
| Hillrock 4HM | Hillrock 6HM | Hillrock 7HM | Hillrock 8HM |
| WV-N NAD 83 N: 456308.95 WV-N NAD 83 E: 1611335.79 WV-N NAD 27 N: 456272.73 WV-N NAD 27 E: 1642773.44 Lat. NAD 83: 39.74587001 Lon. NAD 83: -80.77026312 Lat. NAD 27: 39.74579253 Lon. NAD 27: -80.77045028 UTM 17 NAD 83 (m) N: 4399577.13 UTM 17 NAD 83 (m) E: 519682.78 | WV-N NAD 83 N: 456320.95 WV-N NAD 83 E: 1611335.84 WV-N NAD 27 N: 456284.73 WV-N NAD 27 E: 1642773.50 Lat. NAD 83: 39.74590295 Lon. NAD 83: -80.77026353 Lat. NAD 27: 39.74582547 Lon. NAD 27: -80.77045069 UTM 17 NAD 83 (m) N: 4399580.78 UTM 17 NAD 83 (m) E: 519682.74 | WV-N NAD 83 N: 456332.95 WV-N NAD 83 E: 1611335.90 WV-N NAD 27 N: 456296.73 WV-N NAD 27 E: 1642773.55 Lat. NAD 83: 39.74592590 Lon. NAD 83: -80.77026393 Lat. NAD 27: 39.74585841 Lon. NAD 27: -80.77045109 UTM 17 NAD 83 (m) N: 4399584.44 UTM 17 NAD 83 (m) E: 519682.70 | WV-N NAD 83 N: 456356.95 WV-N NAD 83 E: 1611336.01 WV-N NAD 27 N: 456320.73 WV-N NAD 27 E: 1642773.66 Lat. NAD 83: 39.74600178 Lon. NAD 83: -80.77026474 Lat. NAD 27: 39.74592430 Lon. NAD 27: -80.77045191 UTM 17 NAD 83 (m) N: 4399591.75 UTM 17 NAD 83 (m) E: 519682.61 |
| Hillrock 9HM | Hillrock 10HM | | |
| WV-N NAD 83 N: 456368.95 WV-N NAD 83 E: 1611336.03 WV-N NAD 27 N: 456332.73 WV-N NAD 27 E: 1642773.68 Lat. NAD 83: 39.74603472 Lon. NAD 83: -80.77026528 Lat. NAD 27: 39.74595724 Lon. NAD 27: -80.77045244 UTM 17 NAD 83 (m) N: 4399595.41 UTM 17 NAD 83 (m) E: 519682.55 | WV-N NAD 83 N: 456380.95 WV-N NAD 83 E: 1611336.12 WV-N NAD 27 N: 456344.72 WV-N NAD 27 E: 1642773.77 Lat. NAD 83: 39.74606767 Lon. NAD 83: -80.77026555 Lat. NAD 27: 39.74599919 Lon. NAD 27: -80.77045272 UTM 17 NAD 83 (m) N: 4399599.06 UTM 17 NAD 83 (m) E: 519682.52 | | |



Project Contacts

| Tug Hill Operating | Survey and Engineer |
|--|--|
| Jonathan White - Regulatory Analyst 724-485-2000 Off. 304-689-7676 Cell | Kenneth Kelly 304-338-6985 Off. |
| Geoff Radler - V.P. Production 817-632-5200 Off. | John P. See 304-442-0220 Off. |
| | Zachary Summerfield 304-338-6987 Off. |

Tug Hill Operating, LLC
380 Southpointe Blvd
Southpointe Plaza II, Suite 200
Canonsburg, PA 15317

Environmental:
Wetland Delineations as provided by Allstar Ecology dated April 9, 2018

Topographic Information:
The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Burton, WV

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
West Virginia State Law
Section XIV, Chapter 24-C requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW
Know what's below. Call before you dig.

Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities

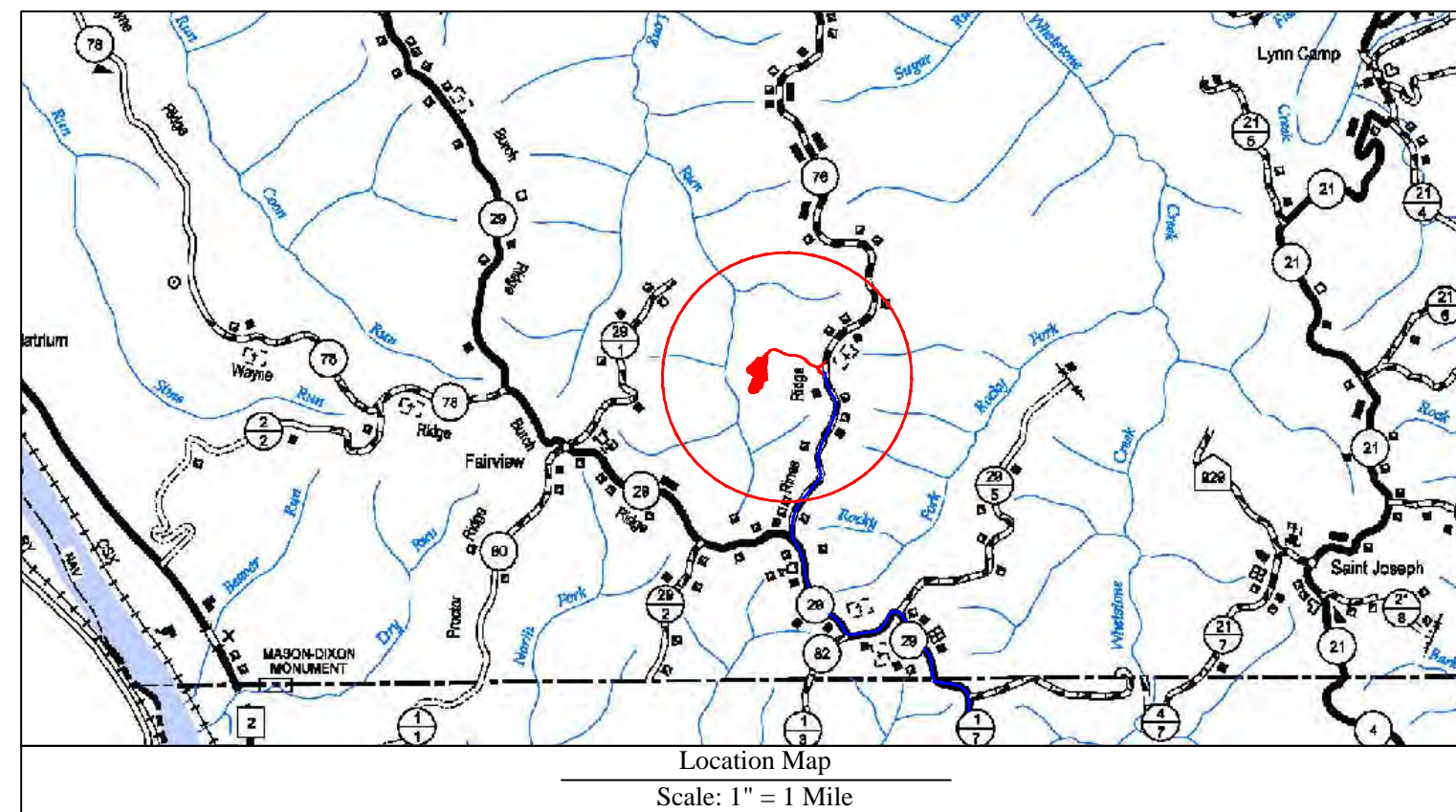
The WV Mines Website was consulted. Previous (Current) mining activities are not within the AOI.
WVDEP Website files show that there are active and/or abandoned gas wells within the AOI

Approach Routes:

From the intersection of OH Rt 7 and WV Rt 2 near New Martinsville, WV. Follow WV Rt 2 North for 4.5 mi. Turn Right onto Co Rt 89 (Proctor Creek Rd). Follow Co Rt 89 for 5.9 mi. Turn Left onto Co Rt 1/7 (Coffield Ridge). Follow Co Rt 1/7 for 1.7 mi. Co Rt 1/7 becomes Co Rt 29 (Coffield Ridge). Follow Co Rt 29 for 1.4 mi. Turn Right onto Co Rt 76 (Rines Ridge Rd). Follow Co Rt 76 for 1.1 mi. The site entrance will be on the Left (West) side of the road.

| Floodplain Conditions | |
|---|-------------|
| Do site construction activities take place in a floodplain: | NO |
| Permit needed from county floodplain coordinator: | NO |
| Flood Hazard Zone: | X |
| HEC-RAS Study completed: | N/A |
| Floodplain shown on drawings: | N/A |
| FIRM Map Number(s) for site: | S401C 0210E |
| Acres of construction in floodplain: | N/A |

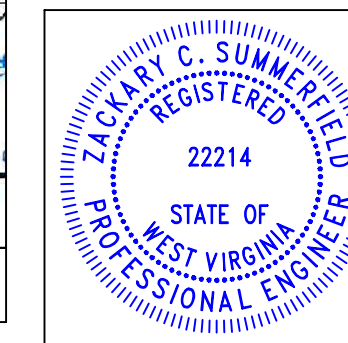
| Site Locations (NAD 27) | | | Site Locations (NAD 83) | |
|-------------------------|---------------|----------------|-------------------------|----------------|
| Structure | Latitude (DD) | Longitude (DD) | Structure | Longitude (DD) |
| Site Entrance | 39.74553374 | -80.76403326 | Site Entrance | -80.76384582 |
| Center of Well Pad | 39.74589345 | -80.77049703 | Center of Well Pad | -80.77030987 |
| Center of Staging Area | 39.74448668 | -80.77085805 | Center of Staging Area | -80.77067099 |



Well Location Restrictions

- All Pad construction complies with the following restrictions.
- *250' from an existing well or developed spring used for human or domestic animals.
- *625' from an occupied dwelling or barn greater than 2,500 SF used for poultry or dairy measured from the center of the pad.
- *100' from the edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.
- *300' from the edge of disturbance to a naturally reproducing trout stream.
- *1,000' of a surface or ground water intake to a public water supply.

(Well Location Restrictions of WV Code 22-6A-12)



Design Certification
The drawings, construction notes and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas (OC&G).
All Plans, Sheets, and/or Reference Diagrams included in this design constitute a complete set of plans. A complete set of plans is necessary to construct the site in accordance with the design.
Zachary C. Summerfield
RPE 22214
Kelly Surveying PLLC
CO#04023-09
Date: 05-24-2018

| Sheet | Description |
|-------|---------------------------------------|
| 1 | Cover Sheet |
| V1 | Schedule of Quantities |
| N1-N4 | Site Notes |
| 2 | Pre-Construction Site Conditions |
| 3 | Site Soil Map |
| 4 | Clearing Exhibit |
| 5 | Overall Plan View |
| 6-7 | E&S Plan View |
| 8 | Toe Key Exhibit |
| 9-10 | Plan View |
| 11 | Cross Sections - Well Pad |
| 12 | Cross Sections - Well Pad Access Road |
| 13 | Cross Sections - Staging Area |
| G1-G2 | Geotechnical Exhibit |
| L1 | Landowner Disturbed Area Exhibit |
| S1 | Site Reclamation |
| M1-M3 | Production Exhibit |
| D1-D2 | Erosion and Sediment Control Details |
| R1 | Access Road Details |
| P1 | Pad Details |

Revision
Design
Design: WVDEP Corrections

Date
05-24-2018
07-02-2018

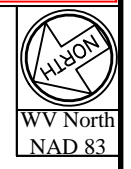


THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING

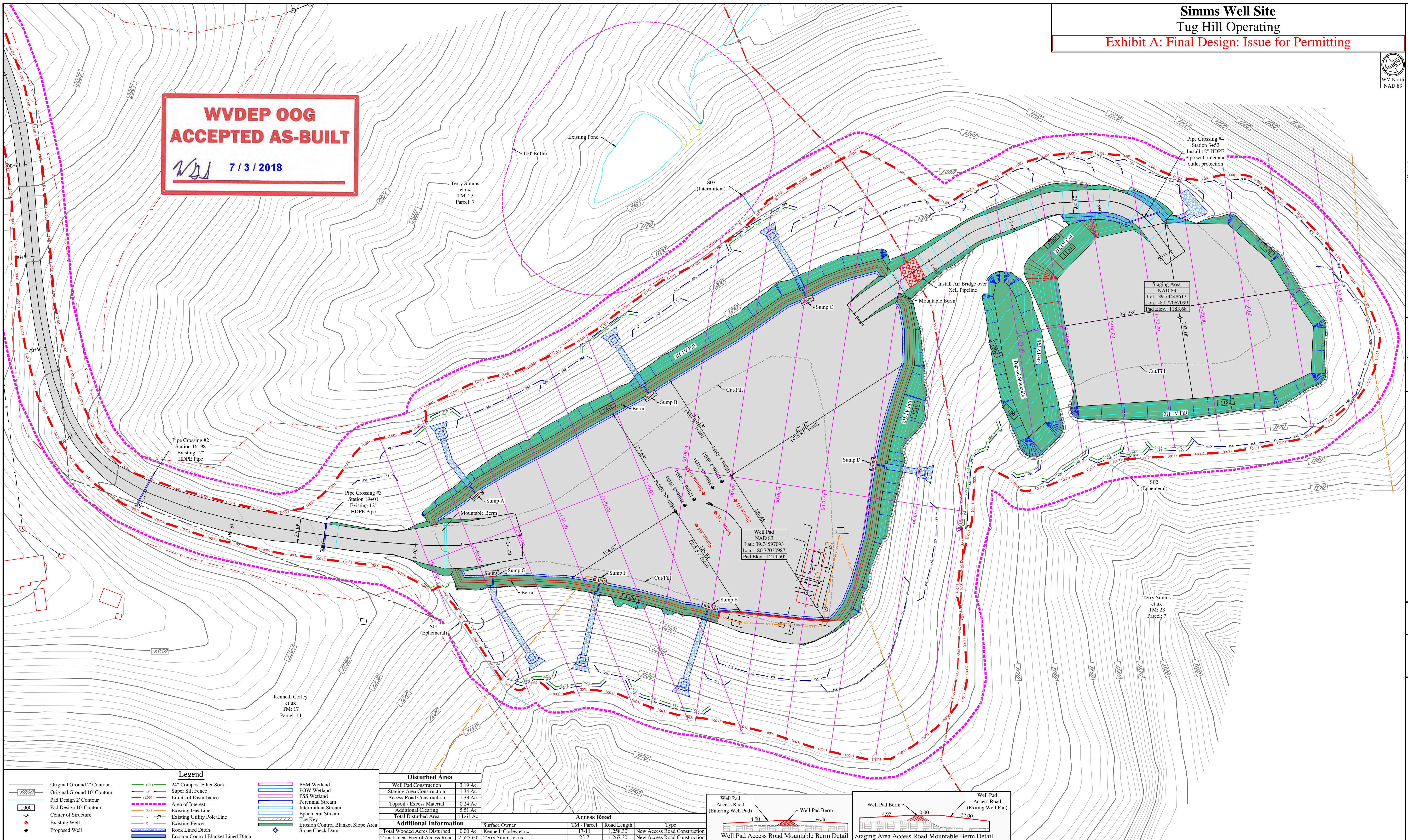


Cover Sheet
Simms Well Site
Franklin District
Marshall County, WV

Date: 05/24/2018
Scale: As Shown
Designed By: ZS
File No.
Sheet 1 of 13



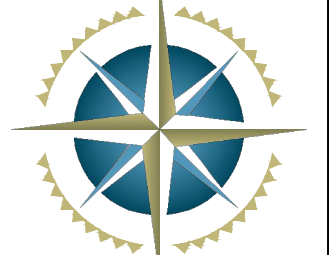
WVDEP OOG
ACCEPTED AS-BUILT
WJ 7/3/2018



Revision
 Design
 Design: WVDEP Corrections

Date
 05-24-2018
 07-02-2018

TUG HILL
OPERATING



THIS DOCUMENT
 PREPARED FOR
 TUG HILL
 OPERATING

Kelly Surveying
 250 West 254
 Salisbury, WV 26459
 304-538-6985

Site Plan
Simms Well Site
 Franklin District
 Marshall County, WV

Legend

| | | | | | |
|--|-----------------------------|--|-------------------------------------|--|------------------------------------|
| | Original Ground 10' Contour | | 24" Composite Filter Sock | | PEM Wetland |
| | Original Ground 2' Contour | | Super Silt Fence | | POW Wetland |
| | Pad Design 2' Contour | | Limits of Disturbance | | PSS Wetland |
| | Pad Design 10' Contour | | Area of Interest | | Perennial Stream |
| | Center of Structure | | Existing Gas Line | | Intermittent Stream |
| | Existing Well | | Existing Utility Pole/Line | | Ephemeral Stream |
| | Proposed Well | | Existing Fence | | Toe Key |
| | | | Rock Lined Ditch | | Erosion Control Blanket Slope Area |
| | | | Erosion Control Blanket Lined Ditch | | Stone Check Dam |

Disturbed Area

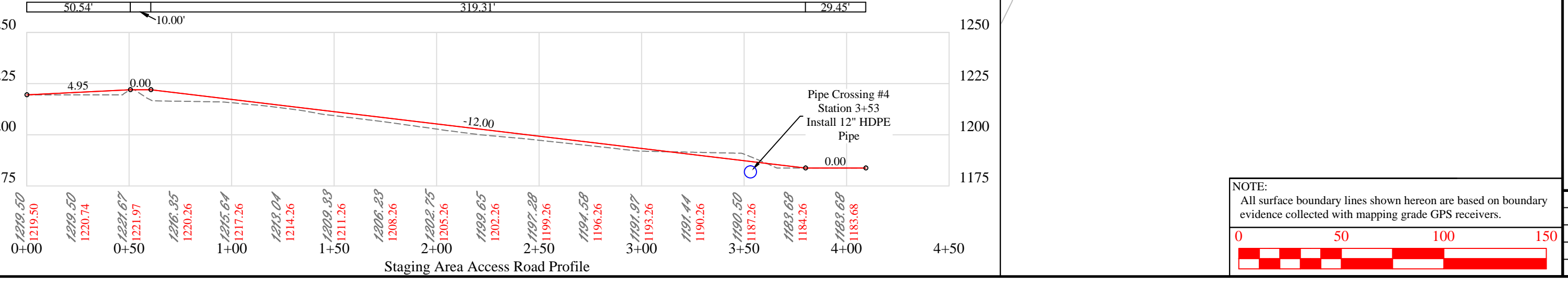
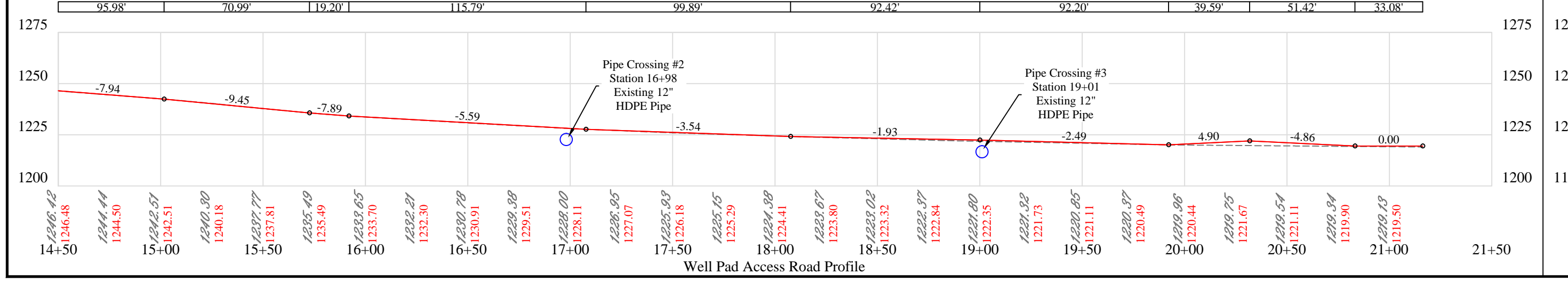
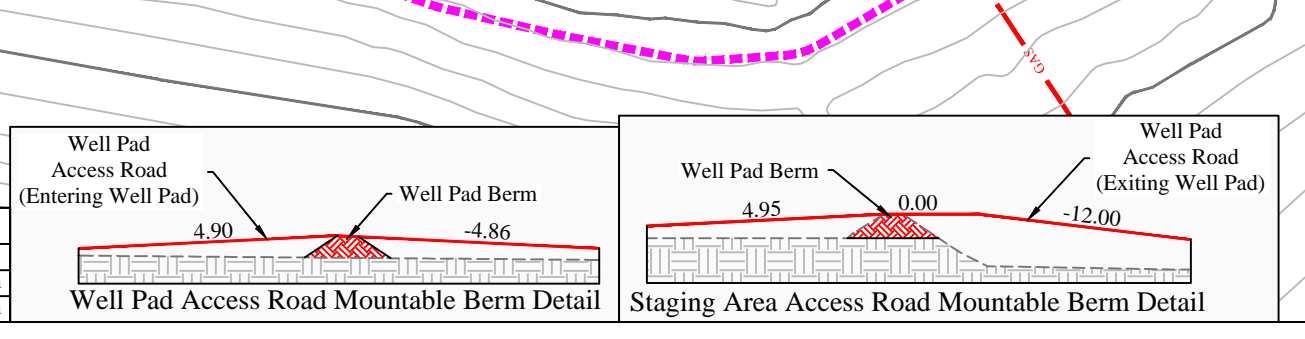
| | |
|-----------------------------|-----------------|
| Well Pad Construction | 3.19 Ac |
| Staging Area Construction | 1.34 Ac |
| Access Road Construction | 1.33 Ac |
| Topsoil / Excess Material | 0.24 Ac |
| Additional Clearing | 5.51 Ac |
| Total Disturbed Area | 11.61 Ac |

Additional Information

| | | | |
|---|------------------|-------------|------------------------------|
| Surface Owner | TM - Parcel | Road Length | Type |
| Kenneth Corley et ux | 17-11 | 1,238.30' | New Access Road Construction |
| Terry Simms et ux | 23-7 | 1,267.30' | New Access Road Construction |
| Total Worsened Acres Disturbed | 0.00 Ac | | |
| Total Linear Feet of Access Road | 2,525.60' | | |

Access Road

| | | |
|--|---------------|---|
| Well Pad Access Road (Entering Well Pad) | Well Pad Berm | Well Pad Access Road (Exiting Well Pad) |
| 4.90' | -4.86' | 4.95' |
| 0.00' | 0.00' | -12.00' |



NOTE:
 All surface boundary lines shown hereon are based on boundary evidence collected with mapping grade GPS receivers.