



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Monday, September 18, 2017
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
550 BAILEY AVENUE, SUITE 510

FORT WORTH, TX 76107

Re: Permit approval for HEAVEN HILL 2W-9HM
47-051-01951-00-00

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: HEAVEN HILL 2W-9HM
Farm Name: C.R. JR. & A.H. HAGEDORN
U.S. WELL NUMBER: 47-051-01951-00-00
Horizontal 6A / New Drill
Date Issued: 9/18/2017

Promoting a healthy environment.

09/22/2017

PERMIT CONDITIONS

047-051-01951

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.

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PERMIT CONDITIONS

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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 Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Heaven Hill Unit 2W-9HM Well Pad Name: Heaven Hill Unit 2

3) Farm Name/Surface Owner: Charles R. Hagedorn, Jr., et ux Public Road Access: Blake Ridge Rd (Co. Rt. 21/3)

4) Elevation, current ground: 1350' Elevation, proposed post-construction: 1331'

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

Other _____

(b) If Gas Shallow _____ Deep _____

Horizontal _____

[Handwritten signature]
7/13/17

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6727' - 6779', thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,879'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 16,535'

11) Proposed Horizontal Leg Length: 8,760'

12) Approximate Fresh Water Strata Depths: 70', 1068'

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

14) Approximate Saltwater Depths: 2167'

15) Approximate Coal Seam Depths: Sewickly Coal - 969' and Pittsburgh Coal - 1059'

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: Marshall County Coal Co. / Marshall County Mine
Depth: 1059' TVD and 291' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co. **RECEIVED**
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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	125'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,130'	1,120'	1128ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,130'	1,120'	1128ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,814'	2,804'	918ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	16,535'	16,525'	4223ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,895'	
Liners	N/A						

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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	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8960		
Liners	N/A						

PACKERS

Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			RECEIVED

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WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill Unit 2W-9HM
Well Pad Name: Heaven Hill Unit 2

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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 22,400,000 lb proppant and 346,320 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 32.98

22) Area to be disturbed for well pad only, less access road (acres): 4.57

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 Attached

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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Conductor, Coal and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

Intermediate Casing:

Premium NE-1 + 2% bwoc CaCl₂ + 46.5% Fresh Water

- Premium NE-1 – Class A Portland API spec
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Kick Off Plug:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L + 38% Fresh Water

- Class H – Increased Compressive Strength Cement
- Sodium Metasilicate – Free Water Control; Early Strength Additive
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Production Casing Cement:

Lead: *50:50 (Poz:Premium NE-1) + .2% R-3 + .2% MPA-170 + .75 gal/100sk FP-13L*

Tail: *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*

- Poz – Fly Ash
- Premium NE-1 – Class A Portland API spec
- R-3 – Cement Retarder
- MPA-170 – Gelling Agent
- FP-13L – Anti-Foaming Agent
- ASA-301 – Free Water Control Agent
- BA-10A – Bonding Agent
- ASCA-1 – Solubility Additive

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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 (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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

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

Permit well - Heaven Hill 2W-9HM

Wells within 500' Buffer

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

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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
4705101918	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101906	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101907	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101908	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101884	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Comments
4705101910	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled
4705101911	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled
4705101912	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled

§.11. Area of Review-- The permittee shall review the area surrounding the proposed well pad so as to identify and evaluate potential conduits for unintended fracture propagation, a report of which the permittee shall provide to the Office with the application for well work. All existing active, plugged, abandoned, and undocumented wells within a five hundred feet (500') radius of the surface location of the well that is the subject of the new application and within a five hundred feet (500') radius of the lateral section of the wellbore shall be considered for the potential of unintended fracture propagation. The report shall detail those wells that are known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation. The detail shall include at a minimum the API number, operator name, total depth, perforated formation(s) and producing zones not perforated.

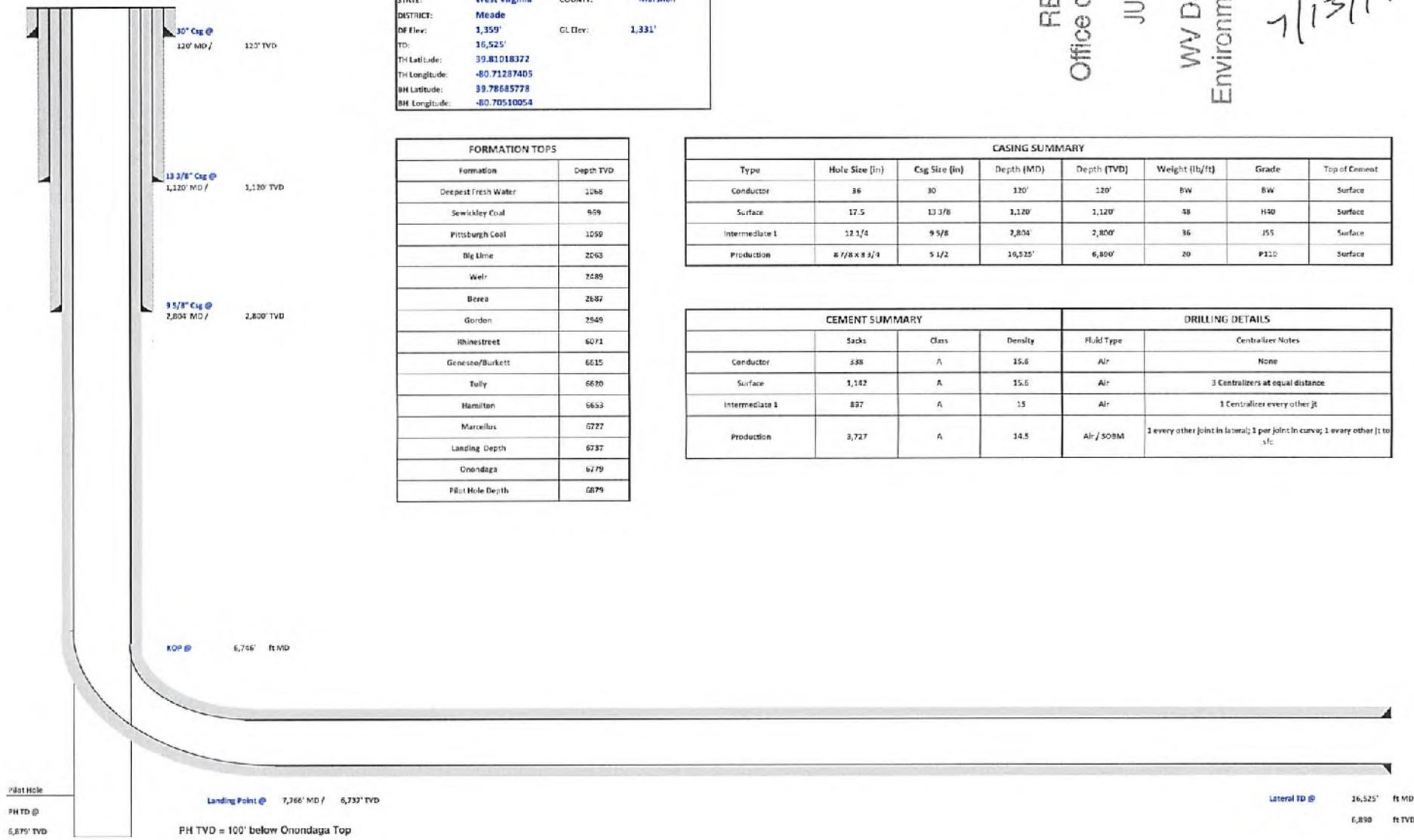


WELL NAME: Heaven Hill 2W-9HM
STATE: West Virginia **COUNTY:** Marshall
DISTRICT: Meade
DE Elev: 1,359' **GL Elev:** 1,331'
TD: 16,525'
TH Latitude: 39.81018372
TH Longitude: -80.71287405
BH Latitude: 39.78685778
BH Longitude: -80.70510054

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1068
Sewickley Coal	959
Pittsburgh Coal	1059
Big Lime	2063
Weir	2489
Berea	2687
Gordon	2549
Rhinesstreet	6071
Genesee/Burkett	6615
Tully	6670
Hamilton	6653
Marcellus	6727
Landing Depth	6737
Onondaga	6779
Pilot Hole Depth	6879

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	1,120'	1,120'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,804'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	16,525'	6,890'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	588	A	15.8	Air	None
Surface	1,142	A	15.5	Air	3 Centralizers at equal distance
Intermediate 1	897	A	15	Air	1 Centralizer every other jt
Production	3,727	A	14.5	Air / SOBIM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c



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TUG HILL
OPERATING

Well: Heaven Hill 2W-09HM (slot I)
Site: Heaven Hill 2
Project: Marshall County, West Virginia
Design: rev2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	
2	1500.00	0.00	0.00	1600.00	0.00	0.00	0.000	0.00	0.00	KOP Begin 2 7/100' build
3	1850.00	5.00	253.54	1849.59	-1.23	-10.63	2.000	263.54	-1.54	Begin 5.00' tangent
4	2904.34	5.00	253.54	2900.01	-11.57	-102.14	0.000	0.00	-14.56	Begin 6 7/100' build/turn
5	3386.24	33.91	253.54	3349.58	-29.43	-259.95	0.000	0.00	-37.06	Begin 33.91' tangent section
6	6745.69	33.91	253.54	6137.51	-240.30	-2122.46	0.000	0.00	-302.56	Begin 10 7/100' build/turn
7	7765.67	69.00	150.05	6737.01	-697.65	-2161.55	10.000	-110.37	-323.70	Begin 69.00' lateral section
8	16625.46	69.00	150.05	6690.01	-8465.56	2210.99	0.000	0.00	8769.84	PBHLTD

Azimuths to Grid North
True North: -0.18°
Magnetic North: -8.87°

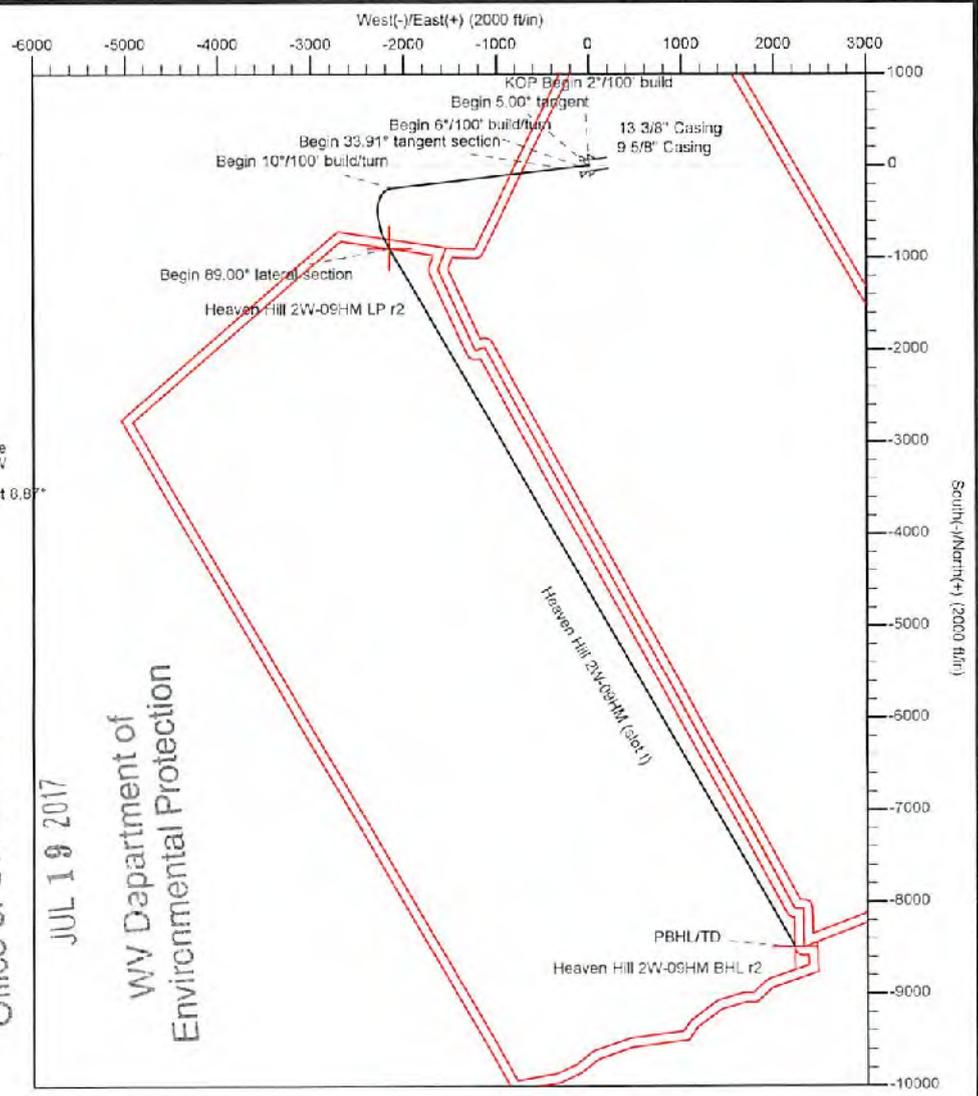
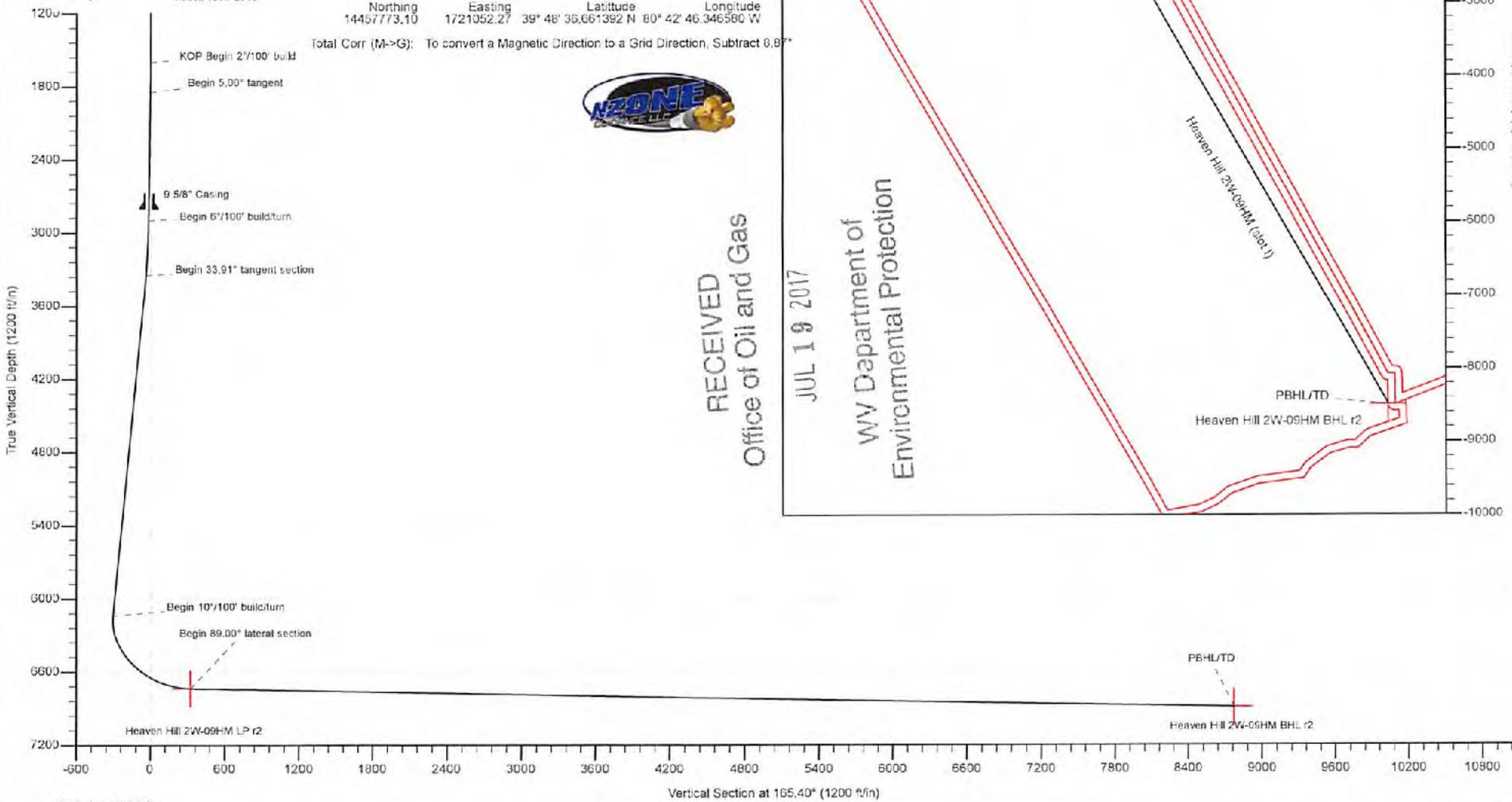
Magnetic Field
Strength: 52209.35nT
Dip Angle: 68.99°
Date: 4/12/2017
Model: IGRF2015

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: CRS 1980
Zone: Zone 17N (64 W to 78 W)

System Datum: Mean Sea Level
Depth Reference: RKB=1331+26 @ 1359.00ft

Northing 14457773.10 Easting 1721052.27 Latitude 39° 48' 35.661392 N Longitude 80° 42' 46.346580 W

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.87°



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Planning Report - Geographic

West Virginia Department of Environmental Protection

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-09HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+28 @ 1359.00ft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+28 @ 1359.00ft
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-09HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	Heaven Hill 2				
Site Position:		Northing:	14,457,669.22 ft	Latitude:	39° 48' 35.834400 N
From:	Lat/Long	Easting:	1,720,978.41 ft	Longitude:	80° 42' 47.296800 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well	Heaven Hill 2W-09HM (slot I)					
Well Position	+N/-S	0.00 ft	Northing:	14,457,773.10 ft	Latitude:	39° 48' 38.861392 N
	+E/-W	0.00 ft	Easting:	1,721,052.27 ft	Longitude:	80° 42' 46.346580 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	1,331.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (")	Dip Angle (")	Field Strength (nT)
	IGRF2015	4/12/2017	-8.68	66.99	52,206.29074983

Design	rev2			
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	165.40

Plan Survey Tool Program	Date	8/5/2017		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,525.46 rev2 (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	0.000	0.000	0.000	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.000	0.000	0.000	0.00	
1,850.00	5.00	263.54	1,849.69	-1.23	-10.83	2.000	2.000	0.000	263.54	
2,904.34	5.00	263.54	2,900.01	-11.57	-102.14	0.000	0.000	0.000	0.00	
3,386.24	33.91	263.54	3,349.58	-29.43	-259.95	6.000	6.000	0.000	0.00	
6,745.69	33.91	263.54	6,137.51	-240.30	-2,122.46	0.000	0.000	0.000	0.00	
7,785.67	89.00	150.05	6,737.01	-897.65	-2,161.55	10.000	5.401	-11.127	-110.37	Heaven Hill 2W-09HM
16,525.46	89.00	150.05	6,890.01	-8,486.56	2,210.99	0.000	0.000	0.000	0.00	Heaven Hill 2W-09HM

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Planning Report - Geographic

WV Department of Environmental Protection

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-09HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+28 @ 1359.00ft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+28 @ 1359.00ft
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-09HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
100.00	0.00	0.00	100.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
200.00	0.00	0.00	200.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
300.00	0.00	0.00	300.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
400.00	0.00	0.00	400.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
500.00	0.00	0.00	500.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
600.00	0.00	0.00	600.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
700.00	0.00	0.00	700.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
800.00	0.00	0.00	800.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
900.00	0.00	0.00	900.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,457,773.10	1,721,052.27	39° 48' 36.661392 N	80° 42' 46.346580 W
KOP Begin 2°/100' build									
1,700.00	2.00	283.54	1,699.98	-0.20	-1.73	14,457,772.91	1,721,050.53	39° 48' 36.559506 N	80° 42' 46.368818 W
1,800.00	4.00	283.54	1,799.84	-0.79	-6.93	14,457,772.32	1,721,045.33	39° 48' 36.553850 N	80° 42' 46.435503 W
1,850.00	5.00	283.54	1,849.69	-1.23	-10.83	14,457,771.88	1,721,041.44	39° 48' 36.549610 N	80° 42' 46.485491 W
Begin 5.00° tangent									
1,900.00	5.00	283.54	1,899.50	-1.72	-15.16	14,457,771.39	1,721,037.11	39° 48' 36.544900 N	80° 42' 46.541019 W
2,000.00	5.00	283.54	1,999.12	-2.70	-23.82	14,457,770.41	1,721,028.45	39° 48' 36.535480 N	80° 42' 46.652077 W
2,100.00	5.00	283.54	2,098.74	-3.68	-32.48	14,457,769.43	1,721,019.79	39° 48' 36.526060 N	80° 42' 46.763135 W
2,200.00	5.00	283.54	2,198.36	-4.66	-41.14	14,457,768.45	1,721,011.12	39° 48' 36.516640 N	80° 42' 46.874193 W
2,300.00	5.00	283.54	2,297.98	-5.64	-49.80	14,457,767.46	1,721,002.46	39° 48' 36.507220 N	80° 42' 46.985250 W
2,400.00	5.00	283.54	2,397.59	-6.62	-58.46	14,457,766.48	1,720,993.80	39° 48' 36.497800 N	80° 42' 47.096308 W
2,500.01	5.00	283.54	2,497.21	-7.60	-67.12	14,457,765.50	1,720,985.14	39° 48' 36.488380 N	80° 42' 47.207366 W
2,600.01	5.00	283.54	2,596.83	-8.58	-75.78	14,457,764.52	1,720,976.48	39° 48' 36.478960 N	80° 42' 47.318424 W
2,700.01	5.00	283.54	2,696.45	-9.56	-84.44	14,457,763.54	1,720,967.82	39° 48' 36.469540 N	80° 42' 47.429481 W
2,800.01	5.00	283.54	2,796.07	-10.54	-93.10	14,457,762.56	1,720,959.16	39° 48' 36.460120 N	80° 42' 47.540539 W
2,900.01	5.00	283.54	2,895.69	-11.52	-101.76	14,457,761.58	1,720,950.50	39° 48' 36.450699 N	80° 42' 47.651597 W
2,904.34	5.00	283.54	2,900.01	-11.57	-102.14	14,457,761.54	1,720,950.13	39° 48' 36.450292 N	80° 42' 47.656405 W
Begin 6°/100' build/turn									
3,000.01	10.74	263.54	2,994.74	-13.04	-115.15	14,457,760.07	1,720,937.12	39° 48' 36.536139 N	80° 42' 47.823261 W
3,100.01	16.74	263.54	3,091.83	-15.71	-138.74	14,457,757.39	1,720,913.53	39° 48' 36.510480 N	80° 42' 48.125782 W
3,200.01	22.74	263.54	3,185.91	-19.51	-172.29	14,457,753.60	1,720,879.98	39° 48' 36.473694 N	80° 42' 48.555970 W
3,300.01	28.74	263.54	3,275.95	-24.39	-215.42	14,457,748.71	1,720,836.85	39° 48' 36.427078 N	80° 42' 49.109111 W
3,386.24	33.91	263.54	3,349.58	-29.43	-259.95	14,457,743.67	1,720,792.31	39° 48' 36.378640 N	80° 42' 49.680200 W
Begin 33.91° tangent section									
3,400.01	33.91	263.54	3,361.01	-30.30	-267.59	14,457,742.81	1,720,784.68	39° 48' 36.370336 N	80° 42' 49.778099 W
3,500.01	33.91	263.54	3,444.00	-38.57	-323.03	14,457,736.53	1,720,729.24	39° 48' 36.310033 N	80° 42' 50.489062 W
3,600.01	33.91	263.54	3,526.98	-42.85	-378.47	14,457,730.25	1,720,673.80	39° 48' 36.249729 N	80° 42' 51.200024 W
3,700.01	33.91	263.54	3,609.97	-49.13	-433.91	14,457,723.98	1,720,618.36	39° 48' 36.189423 N	80° 42' 51.910985 W
3,800.01	33.91	263.54	3,692.96	-55.40	-489.35	14,457,717.70	1,720,562.92	39° 48' 36.129116 N	80° 42' 52.621947 W
3,900.01	33.91	263.54	3,775.95	-61.68	-544.79	14,457,711.42	1,720,507.47	39° 48' 36.068808 N	80° 42' 53.332908 W
4,000.01	33.91	263.54	3,858.93	-67.96	-600.23	14,457,705.15	1,720,452.03	39° 48' 36.008499 N	80° 42' 54.043869 W
4,100.01	33.91	263.54	3,941.92	-74.23	-655.67	14,457,698.87	1,720,396.59	39° 48' 35.948189 N	80° 42' 54.754829 W
4,200.01	33.91	263.54	4,024.91	-80.51	-711.12	14,457,692.59	1,720,341.15	39° 48' 35.887877 N	80° 42' 55.465789 W
4,300.01	33.91	263.54	4,107.90	-86.79	-766.56	14,457,686.32	1,720,285.71	39° 48' 35.827564 N	80° 42' 56.176749 W
4,400.01	33.91	263.54	4,190.89	-93.06	-822.00	14,457,680.04	1,720,230.27	39° 48' 35.767250 N	80° 42' 56.887708 W
4,500.01	33.91	263.54	4,273.87	-99.34	-877.44	14,457,673.76	1,720,174.83	39° 48' 35.706935 N	80° 42' 57.598637 W
4,600.01	33.91	263.54	4,356.86	-105.62	-932.88	14,457,667.49	1,720,119.39	39° 48' 35.646618 N	80° 42' 58.309626 W



Planning Report - Geographic

JUL 19 2017

Database: DB_Aug0116_LT_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Heaven Hill 2
Well: Heaven Hill 2W-09HM (slot 1)
Wellbore: Original Hole
Design: rev2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Heaven Hill 2W-09HM (slot 1)
RKB=1331+28 @ 1359.00ft
RKB=1331+28 @ 1359.00ft
Grid
Minimum Curvature

Department of
Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
4,700.01	33.91	263.54	4,439.85	-111.90	-988.32	14,457,661.21	1,720,063.95	39° 48' 35.586301 N	80° 42' 59.020584 W
4,800.01	33.91	263.54	4,522.84	-118.17	-1,043.76	14,457,654.93	1,720,008.51	39° 48' 35.525982 N	80° 42' 59.731542 W
4,900.01	33.91	263.54	4,605.82	-124.45	-1,099.20	14,457,648.65	1,719,953.07	39° 48' 35.465662 N	80° 43' 0.442500 W
5,000.01	33.91	263.54	4,688.81	-130.73	-1,154.64	14,457,642.38	1,719,897.63	39° 48' 35.405340 N	80° 43' 1.153457 W
5,100.01	33.91	263.54	4,771.80	-137.00	-1,210.08	14,457,636.10	1,719,842.19	39° 48' 35.345018 N	80° 43' 1.864414 W
5,200.01	33.91	263.54	4,854.79	-143.28	-1,265.52	14,457,629.82	1,719,786.74	39° 48' 35.284694 N	80° 43' 2.675371 W
5,300.01	33.91	263.54	4,937.77	-149.56	-1,320.96	14,457,623.55	1,719,731.30	39° 48' 35.224369 N	80° 43' 3.286327 W
5,400.01	33.91	263.54	5,020.76	-155.83	-1,376.40	14,457,617.27	1,719,675.86	39° 48' 35.164043 N	80° 43' 3.997283 W
5,500.01	33.91	263.54	5,103.75	-162.11	-1,431.85	14,457,610.99	1,719,620.42	39° 48' 35.103716 N	80° 43' 4.708239 W
5,600.01	33.91	263.54	5,186.74	-168.39	-1,487.29	14,457,604.72	1,719,564.98	39° 48' 35.043387 N	80° 43' 5.419194 W
5,700.01	33.91	263.54	5,269.73	-174.66	-1,542.73	14,457,598.44	1,719,509.54	39° 48' 34.983057 N	80° 43' 6.130149 W
5,800.01	33.91	263.54	5,352.71	-180.94	-1,598.17	14,457,592.16	1,719,454.10	39° 48' 34.922726 N	80° 43' 6.841104 W
5,900.01	33.91	263.54	5,435.70	-187.22	-1,653.61	14,457,585.89	1,719,398.66	39° 48' 34.862394 N	80° 43' 7.552058 W
6,000.01	33.91	263.54	5,518.69	-193.49	-1,709.05	14,457,579.61	1,719,343.22	39° 48' 34.802062 N	80° 43' 8.263012 W
6,100.01	33.91	263.54	5,601.68	-199.77	-1,764.49	14,457,573.33	1,719,287.78	39° 48' 34.741726 N	80° 43' 8.973966 W
6,200.01	33.91	263.54	5,684.66	-206.05	-1,819.93	14,457,567.05	1,719,232.34	39° 48' 34.681390 N	80° 43' 9.684919 W
6,300.01	33.91	263.54	5,767.65	-212.32	-1,875.37	14,457,560.78	1,719,176.90	39° 48' 34.621053 N	80° 43' 10.395872 W
6,400.01	33.91	263.54	5,850.64	-218.60	-1,930.81	14,457,554.50	1,719,121.46	39° 48' 34.560715 N	80° 43' 11.106825 W
6,500.01	33.91	263.54	5,933.63	-224.88	-1,986.25	14,457,548.23	1,719,066.01	39° 48' 34.500375 N	80° 43' 11.817777 W
6,600.01	33.91	263.54	6,016.62	-231.15	-2,041.69	14,457,541.95	1,719,010.57	39° 48' 34.440034 N	80° 43' 12.528729 W
6,700.01	33.91	263.54	6,099.60	-237.43	-2,097.14	14,457,535.67	1,718,955.13	39° 48' 34.379692 N	80° 43' 13.239681 W
6,745.66	33.91	263.54	6,137.51	-240.30	-2,122.46	14,457,532.81	1,718,929.81	39° 48' 34.352128 N	80° 43' 13.564443 W
Begin 10°/100' build/turn									
6,800.01	32.38	254.00	6,183.02	-246.02	-2,151.52	14,457,527.09	1,718,900.75	39° 48' 34.296497 N	80° 43' 13.937199 W
6,900.01	31.61	235.12	6,268.05	-268.44	-2,198.88	14,457,504.66	1,718,853.39	39° 48' 34.076272 N	80° 43' 14.545173 W
7,000.01	33.61	216.88	6,352.49	-305.66	-2,237.08	14,457,467.45	1,718,815.19	39° 48' 33.709483 N	80° 43' 15.036382 W
7,100.01	37.93	201.39	6,433.77	-356.54	-2,264.97	14,457,416.56	1,718,787.30	39° 48' 33.207275 N	80° 43' 15.385999 W
7,200.01	43.88	189.08	6,509.44	-419.55	-2,281.69	14,457,353.56	1,718,770.56	39° 48' 32.584909 N	80° 43' 15.612801 W
7,300.01	50.89	179.36	6,577.19	-492.75	-2,286.74	14,457,280.35	1,718,765.52	39° 48' 31.861294 N	80° 43' 15.880499 W
7,400.01	58.55	171.48	6,634.96	-573.94	-2,279.97	14,457,199.16	1,718,772.30	39° 48' 31.058417 N	80° 43' 15.596937 W
7,500.02	66.63	164.82	6,680.99	-660.64	-2,261.58	14,457,112.46	1,718,790.69	39° 48' 30.200674 N	80° 43' 15.364658 W
7,600.02	74.95	158.94	6,713.90	-750.23	-2,232.13	14,457,022.88	1,718,820.14	39° 48' 29.314125 N	80° 43' 14.990714 W
7,700.02	83.41	153.50	6,732.67	-839.96	-2,192.52	14,456,933.14	1,718,859.75	39° 48' 28.425709 N	80° 43' 14.488476 W
7,765.67	89.00	150.05	6,737.01	-897.65	-2,161.55	14,456,875.46	1,718,890.72	39° 48' 27.854467 N	80° 43' 14.091822 W
Begin 89.00° lateral section									
7,800.02	89.00	150.05	6,737.61	-927.41	-2,144.40	14,456,845.70	1,718,907.87	39° 48' 27.559730 N	80° 43' 13.973221 W
7,900.02	89.00	150.05	6,739.36	-1,014.04	-2,094.49	14,456,759.06	1,718,957.78	39° 48' 26.701688 N	80° 43' 13.236831 W
8,000.02	89.00	150.05	6,741.11	-1,100.87	-2,044.57	14,456,672.43	1,719,007.70	39° 48' 25.843642 N	80° 43' 12.500445 W
8,100.02	89.00	150.05	6,742.85	-1,167.31	-1,994.65	14,456,585.80	1,719,057.61	39° 48' 24.965596 N	80° 43' 11.964064 W
8,200.02	89.00	150.05	6,744.60	-1,273.94	-1,944.74	14,456,499.16	1,719,107.53	39° 48' 24.127550 N	80° 43' 11.327687 W
8,300.02	89.00	150.05	6,746.35	-1,360.57	-1,894.82	14,456,412.53	1,719,157.45	39° 48' 23.269502 N	80° 43' 10.691315 W
8,400.02	89.00	150.05	6,748.09	-1,447.21	-1,844.91	14,456,325.90	1,719,207.36	39° 48' 22.411454 N	80° 43' 10.054947 W
8,500.02	89.00	150.05	6,749.84	-1,533.84	-1,794.99	14,456,239.26	1,719,257.28	39° 48' 21.553404 N	80° 43' 9.418583 W
8,600.02	89.00	150.05	6,751.59	-1,620.47	-1,745.07	14,456,152.63	1,719,307.19	39° 48' 20.695354 N	80° 43' 8.782224 W
8,700.02	89.00	150.05	6,753.33	-1,707.11	-1,695.16	14,456,066.00	1,719,357.11	39° 48' 19.837302 N	80° 43' 8.145869 W
8,800.02	89.00	150.05	6,755.08	-1,793.74	-1,645.24	14,455,979.36	1,719,407.03	39° 48' 18.979250 N	80° 43' 7.509519 W
8,900.02	89.00	150.05	6,756.83	-1,880.37	-1,595.33	14,455,892.73	1,719,456.94	39° 48' 18.121196 N	80° 43' 6.873173 W
9,000.02	89.00	150.05	6,758.57	-1,967.01	-1,545.41	14,455,806.10	1,719,506.86	39° 48' 17.263142 N	80° 43' 6.236831 W
9,100.02	89.00	150.05	6,760.32	-2,053.64	-1,495.49	14,455,719.46	1,719,556.77	39° 48' 16.405088 N	80° 43' 5.600494 W
9,200.02	89.00	150.05	6,762.07	-2,140.28	-1,445.58	14,455,632.83	1,719,606.69	39° 48' 15.547030 N	80° 43' 4.964161 W
9,300.02	89.00	150.05	6,763.81	-2,226.91	-1,395.66	14,455,546.19	1,719,656.61	39° 48' 14.688973 N	80° 43' 4.327832 W
9,400.02	89.00	150.05	6,765.56	-2,313.54	-1,345.75	14,455,459.56	1,719,706.52	39° 48' 13.830914 N	80° 43' 3.691508 W
9,500.02	89.00	150.05	6,767.31	-2,400.18	-1,295.83	14,455,372.93	1,719,756.44	39° 48' 12.972856 N	80° 43' 3.055188 W
9,600.02	89.00	150.05	6,769.05	-2,486.81	-1,245.91	14,455,286.29	1,719,806.35	39° 48' 12.114794 N	80° 43' 2.418873 W



Planning Report - Geographic

Database: DB_Aug0116_LT_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 2
 Well: Heaven Hill 2W-09HM (slot I)
 Wellbore: Original Hole
 Design: rev2

Local Co-ordinate Reference: Well Heaven Hill 2W-09HM (slot I)
 TVD Reference: RKB=1331+28 @ 1359.00ft
 MD Reference: RKB=1331+28 @ 1359.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Department of
 Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
9,700.02	89.00	150.05	6,770.80	-2,573.44	-1,196.00	14,455,199.66	1,719,856.27	39° 48' 11.256733 N	80° 43' 1.782562 W
9,800.02	89.00	150.05	6,772.55	-2,660.08	-1,146.08	14,455,113.03	1,719,906.19	39° 48' 10.398671 N	80° 43' 1.146255 W
9,900.02	89.00	150.05	6,774.29	-2,746.71	-1,096.17	14,455,026.39	1,719,956.10	39° 48' 9.540607 N	80° 43' 0.509953 W
10,000.02	89.00	150.05	6,776.04	-2,833.34	-1,046.26	14,454,939.76	1,720,006.02	39° 48' 8.682543 N	80° 42' 59.873655 W
10,100.02	89.00	150.05	6,777.79	-2,919.98	-996.33	14,454,853.13	1,720,055.93	39° 48' 7.824478 N	80° 42' 59.237362 W
10,200.02	89.00	150.05	6,779.53	-3,006.61	-946.42	14,454,766.49	1,720,105.85	39° 48' 6.966411 N	80° 42' 58.601073 W
10,300.02	89.00	150.05	6,781.28	-3,093.25	-896.50	14,454,679.86	1,720,155.77	39° 48' 6.108344 N	80° 42' 57.964788 W
10,400.02	89.00	150.05	6,783.03	-3,179.88	-846.59	14,454,593.22	1,720,205.68	39° 48' 5.250276 N	80° 42' 57.328508 W
10,500.02	89.00	150.05	6,784.77	-3,266.51	-796.67	14,454,506.59	1,720,255.60	39° 48' 4.392207 N	80° 42' 56.692232 W
10,600.02	89.00	150.05	6,786.52	-3,353.15	-746.75	14,454,419.96	1,720,305.51	39° 48' 3.534138 N	80° 42' 56.056960 W
10,700.02	89.00	150.05	6,788.27	-3,439.78	-696.84	14,454,333.32	1,720,355.43	39° 48' 2.676065 N	80° 42' 55.419593 W
10,800.02	89.00	150.05	6,790.01	-3,526.41	-646.92	14,454,246.69	1,720,405.35	39° 48' 1.817993 N	80° 42' 54.783430 W
10,900.02	89.00	150.05	6,791.75	-3,613.05	-597.01	14,454,160.06	1,720,455.26	39° 48' 0.959920 N	80° 42' 54.147172 W
11,000.02	89.00	150.05	6,793.51	-3,699.68	-547.09	14,454,073.42	1,720,505.18	39° 48' 0.101845 N	80° 42' 53.510918 W
11,100.02	89.00	150.05	6,795.25	-3,786.31	-497.17	14,453,986.79	1,720,555.09	39° 47' 59.243770 N	80° 42' 52.874668 W
11,200.02	89.00	150.05	6,797.00	-3,872.95	-447.26	14,453,900.16	1,720,605.01	39° 47' 58.385694 N	80° 42' 52.238423 W
11,300.02	89.00	150.05	6,798.75	-3,959.58	-397.34	14,453,813.52	1,720,654.93	39° 47' 57.527617 N	80° 42' 51.602182 W
11,400.02	89.00	150.05	6,800.49	-4,046.21	-347.42	14,453,726.89	1,720,704.84	39° 47' 56.669539 N	80° 42' 50.866845 W
11,500.02	89.00	150.05	6,802.24	-4,132.85	-297.51	14,453,640.26	1,720,754.76	39° 47' 55.811460 N	80° 42' 50.329713 W
11,600.02	89.00	150.05	6,803.99	-4,219.48	-247.59	14,453,553.62	1,720,804.68	39° 47' 54.953380 N	80° 42' 49.693486 W
11,700.02	89.00	150.05	6,805.73	-4,306.12	-197.68	14,453,466.99	1,720,854.59	39° 47' 54.095298 N	80° 42' 49.057262 W
11,800.02	89.00	150.05	6,807.48	-4,392.75	-147.76	14,453,380.35	1,720,904.51	39° 47' 53.237216 N	80° 42' 48.421043 W
11,900.02	89.00	150.05	6,809.23	-4,479.38	-97.84	14,453,293.72	1,720,954.42	39° 47' 52.379133 N	80° 42' 47.784828 W
12,000.02	89.00	150.05	6,810.97	-4,566.02	-47.93	14,453,207.09	1,721,004.34	39° 47' 51.521049 N	80° 42' 47.148618 W
12,100.02	89.00	150.05	6,812.72	-4,652.65	1.99	14,453,120.45	1,721,054.26	39° 47' 50.662964 N	80° 42' 46.512412 W
12,200.02	89.00	150.05	6,814.46	-4,739.28	51.90	14,453,033.82	1,721,104.17	39° 47' 49.804878 N	80° 42' 45.876211 W
12,300.02	89.00	150.05	6,816.21	-4,825.92	101.82	14,452,947.19	1,721,154.09	39° 47' 48.946791 N	80° 42' 45.240014 W
12,400.03	89.00	150.05	6,817.96	-4,912.55	151.74	14,452,860.55	1,721,204.00	39° 47' 48.088703 N	80° 42' 44.603821 W
12,500.03	89.00	150.05	6,819.70	-4,999.18	201.65	14,452,773.92	1,721,253.92	39° 47' 47.230614 N	80° 42' 43.967633 W
12,600.03	89.00	150.05	6,821.45	-5,085.82	251.57	14,452,687.29	1,721,303.84	39° 47' 46.372524 N	80° 42' 43.331449 W
12,700.03	89.00	150.05	6,823.20	-5,172.45	301.48	14,452,600.65	1,721,353.75	39° 47' 45.514433 N	80° 42' 42.685269 W
12,800.03	89.00	150.05	6,824.94	-5,259.09	351.40	14,452,514.02	1,721,403.67	39° 47' 44.656341 N	80° 42' 42.059094 W
12,900.03	89.00	150.05	6,826.69	-5,345.72	401.32	14,452,427.38	1,721,453.58	39° 47' 43.798248 N	80° 42' 41.422923 W
13,000.03	89.00	150.05	6,828.44	-5,432.35	451.23	14,452,340.75	1,721,503.50	39° 47' 42.940154 N	80° 42' 40.786757 W
13,100.03	89.00	150.05	6,830.18	-5,518.99	501.15	14,452,254.12	1,721,553.42	39° 47' 42.082059 N	80° 42' 40.150595 W
13,200.03	89.00	150.05	6,831.93	-5,605.62	551.06	14,452,167.48	1,721,603.33	39° 47' 41.223963 N	80° 42' 39.514437 W
13,300.03	89.00	150.05	6,833.68	-5,692.25	600.98	14,452,080.85	1,721,653.25	39° 47' 40.365866 N	80° 42' 38.878284 W
13,400.03	89.00	150.05	6,835.42	-5,778.89	650.90	14,451,994.22	1,721,703.16	39° 47' 39.507768 N	80° 42' 38.242135 W
13,500.03	89.00	150.05	6,837.17	-5,865.52	700.81	14,451,907.58	1,721,753.08	39° 47' 38.649669 N	80° 42' 37.605960 W
13,600.03	89.00	150.05	6,838.92	-5,952.15	750.73	14,451,820.95	1,721,803.00	39° 47' 37.791569 N	80° 42' 36.969050 W
13,700.03	89.00	150.05	6,840.66	-6,038.79	800.64	14,451,734.32	1,721,852.91	39° 47' 36.933468 N	80° 42' 36.333714 W
13,800.03	89.00	150.05	6,842.41	-6,125.42	850.56	14,451,647.68	1,721,902.83	39° 47' 36.075366 N	80° 42' 35.697583 W
13,900.03	89.00	150.05	6,844.16	-6,212.05	900.48	14,451,561.05	1,721,952.74	39° 47' 35.217263 N	80° 42' 35.061456 W
14,000.03	89.00	150.05	6,845.90	-6,298.69	950.39	14,451,474.42	1,722,002.66	39° 47' 34.359160 N	80° 42' 34.425333 W
14,100.03	89.00	150.05	6,847.65	-6,385.32	1,000.31	14,451,387.78	1,722,052.58	39° 47' 33.501055 N	80° 42' 33.789215 W
14,200.03	89.00	150.05	6,849.40	-6,471.96	1,050.22	14,451,301.15	1,722,102.49	39° 47' 32.642949 N	80° 42' 33.153101 W
14,300.03	89.00	150.05	6,851.14	-6,558.59	1,100.14	14,451,214.51	1,722,152.41	39° 47' 31.784842 N	80° 42' 32.516991 W
14,400.03	89.00	150.05	6,852.89	-6,645.22	1,150.06	14,451,127.88	1,722,202.32	39° 47' 30.926734 N	80° 42' 31.880966 W
14,500.03	89.00	150.05	6,854.64	-6,731.86	1,199.97	14,451,041.25	1,722,252.24	39° 47' 30.068625 N	80° 42' 31.244786 W
14,600.03	89.00	150.05	6,856.38	-6,818.49	1,249.89	14,450,954.61	1,722,302.16	39° 47' 29.210516 N	80° 42' 30.608699 W
14,700.03	89.00	150.05	6,858.13	-6,905.12	1,299.80	14,450,867.96	1,722,352.07	39° 47' 28.352405 N	80° 42' 29.972597 W
14,800.03	89.00	150.05	6,859.88	-6,991.76	1,349.72	14,450,781.35	1,722,401.99	39° 47' 27.494293 N	80° 42' 29.336510 W
14,900.03	89.00	150.05	6,861.62	-7,078.39	1,399.64	14,450,694.71	1,722,451.90	39° 47' 26.636180 N	80° 42' 28.700426 W
15,000.03	89.00	150.05	6,863.37	-7,165.02	1,449.56	14,450,608.08	1,722,501.82	39° 47' 25.778067 N	80° 42' 28.064348 W
15,100.03	89.00	150.05	6,865.12	-7,251.66	1,499.47	14,450,521.45	1,722,551.74	39° 47' 24.919952 N	80° 42' 27.428273 W

JUL 19 2017



Planning Report - Geographic

West Virginia Department of Environmental Protection

Database:	DB_Aug0116_LT_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-09HM (slot I)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+28 @ 1858.00ft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+28 @ 1858.00ft
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-09HM (slot I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
15,200.03	89.00	150.05	6,866.86	-7,338.29	1,549.38	14,450,434.81	1,722,801.65	39° 47' 24.061836 N	80° 42' 26.792203 W
15,300.03	89.00	150.05	6,868.61	-7,424.92	1,599.30	14,450,348.18	1,722,651.57	39° 47' 23.203719 N	80° 42' 26.156137 W
15,400.03	89.00	150.05	6,870.36	-7,511.56	1,649.22	14,450,261.55	1,722,701.48	39° 47' 22.345802 N	80° 42' 25.520076 W
15,500.03	89.00	150.05	6,872.10	-7,598.19	1,699.13	14,450,174.91	1,722,751.40	39° 47' 21.487483 N	80° 42' 24.884019 W
15,600.03	89.00	150.05	6,873.85	-7,684.83	1,749.05	14,450,088.28	1,722,801.32	39° 47' 20.629363 N	80° 42' 24.247966 W
15,700.03	89.00	150.05	6,875.60	-7,771.46	1,798.96	14,450,001.64	1,722,851.23	39° 47' 19.771243 N	80° 42' 23.611918 W
15,800.03	89.00	150.05	6,877.34	-7,858.09	1,848.88	14,449,915.01	1,722,901.15	39° 47' 18.913121 N	80° 42' 22.975874 W
15,900.03	89.00	150.05	6,879.09	-7,944.73	1,898.80	14,449,828.38	1,722,951.06	39° 47' 18.054998 N	80° 42' 22.339835 W
16,000.03	89.00	150.05	6,880.84	-8,031.36	1,948.71	14,449,741.74	1,723,000.98	39° 47' 17.196875 N	80° 42' 21.703800 W
16,100.03	89.00	150.05	6,882.58	-8,117.99	1,998.63	14,449,655.11	1,723,050.90	39° 47' 16.338750 N	80° 42' 21.067769 W
16,200.03	89.00	150.05	6,884.33	-8,204.63	2,048.54	14,449,568.48	1,723,100.81	39° 47' 15.480625 N	80° 42' 20.431743 W
16,300.03	89.00	150.05	6,886.08	-8,291.26	2,098.46	14,449,481.84	1,723,150.73	39° 47' 14.622498 N	80° 42' 19.795721 W
16,400.03	89.00	150.05	6,887.82	-8,377.89	2,148.38	14,449,395.21	1,723,200.64	39° 47' 13.764370 N	80° 42' 19.159703 W
16,500.03	89.00	150.05	6,889.57	-8,464.53	2,198.29	14,449,308.58	1,723,250.56	39° 47' 12.906242 N	80° 42' 18.523690 W
16,525.46	89.00	150.05	6,890.01	-8,486.56	2,210.99	14,449,266.54	1,723,263.25	39° 47' 12.688020 N	80° 42' 18.361953 W
PBHL/TD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Heaven Hill 2W-09HM L - hit/miss target center - Point	0.00	0.01	6,737.01	-897.65	-2,161.55	14,456,875.46	1,718,890.72	39° 48' 27.854460 N	80° 43' 14.091816 W
Heaven Hill 2W-09HM B - plan hits target center - Point	0.00	0.00	6,890.01	-8,486.56	2,210.99	14,449,266.54	1,723,263.25	39° 47' 12.688008 N	80° 42' 18.361944 W

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,120.00	1,120.00	13 3/8" Casing	13-3/8	17
2,803.95	2,800.01	9 5/8" Casing	9-5/8	12-1/4

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,600.00	1,600.00	0.00	0.00	KOP Begin 2"/100' build
1,850.00	1,849.69	-1.23	-10.83	Begin 5.00" tangent
2,904.34	2,900.01	-11.57	-102.14	Begin 6"/100' build/turn
3,386.24	3,348.58	-29.43	-259.95	Begin 33.91" tangent section
6,745.69	6,137.51	-240.30	-2,122.46	Begin 10"/100' build/turn
7,765.67	6,737.01	-897.65	-2,161.55	Begin 89.00" lateral section
16,525.46	6,890.01	-8,486.56	2,210.99	PBHL/TD

047-051-01951

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Heaven Hill 2W-9HM

RECEIVED
Office of Oil and Gas

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

JUL 19 2017

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

WV Department of
Environmental Protection

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 986, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

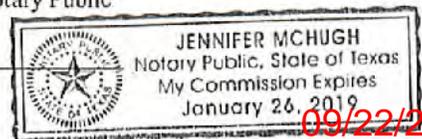
Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

Subscribed and sworn before me this 12th day of July, 20 17

Jennifer McHugh Notary Public

My commission expires 1-26-2019



09/22/2017

Form WW-9

Operator's Well No. Heaven Hill 2W-9HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 32.98 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	10
		Ladino Clover	3

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: *Jim Winkler*

Comments: _____

Title: DEP Inspector

Date: 7/13/17

Field Reviewed? Yes No

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JUL 19 2017

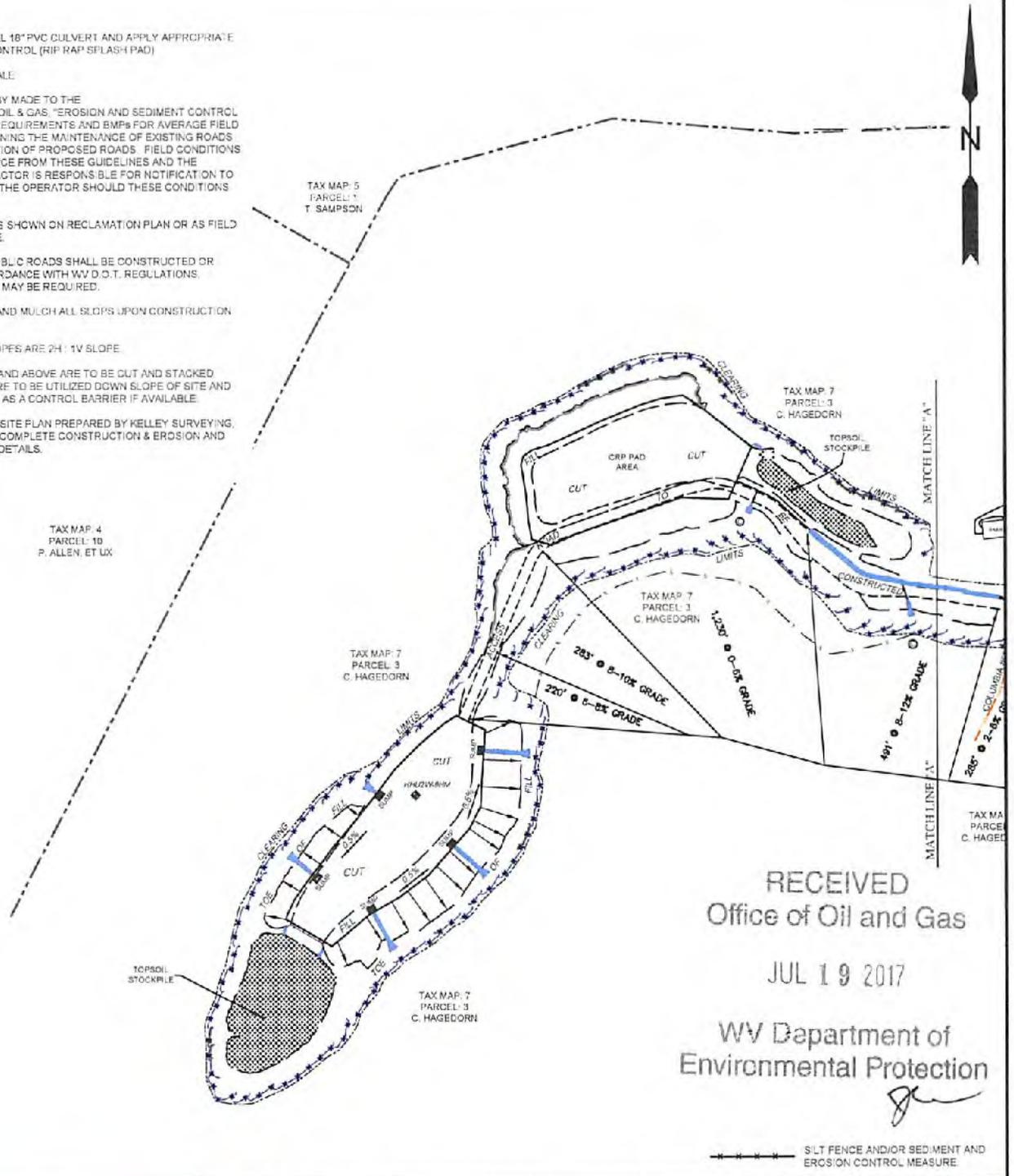
WV Department of
Environmental Protection

09/22/2017

PROPOSED HEAVEN HILL 2W - 9HM

NOTES:

1. - DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP FLASH PAD)
2. DRAWING NOT TO SCALE.
3. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTH-WORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ON TO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL 2W SITE PLAN PREPARED BY KELLEY SURVEYING, DATED 4/27/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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JUL 19 2017
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Environmental Protection

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 #12 Vanderlip Drive #1 Glenville, WV 26031 #3043 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPONTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8703	07/12/2017	NONE

TUG HILL
OPERATING

09/22/2017



Well Site Safety Plan
Tug Hill Operating, LLC

JW
7/13/17

Well Name: Heaven Hill Unit 2W-9HM Pad
Name: Heaven Hill Unit 2 Marshall County,
West Virginia

UTM (meters), NAD83, Zone 17:
Northing: 4,406,726.20
Easting: 524,574.44

July 2017

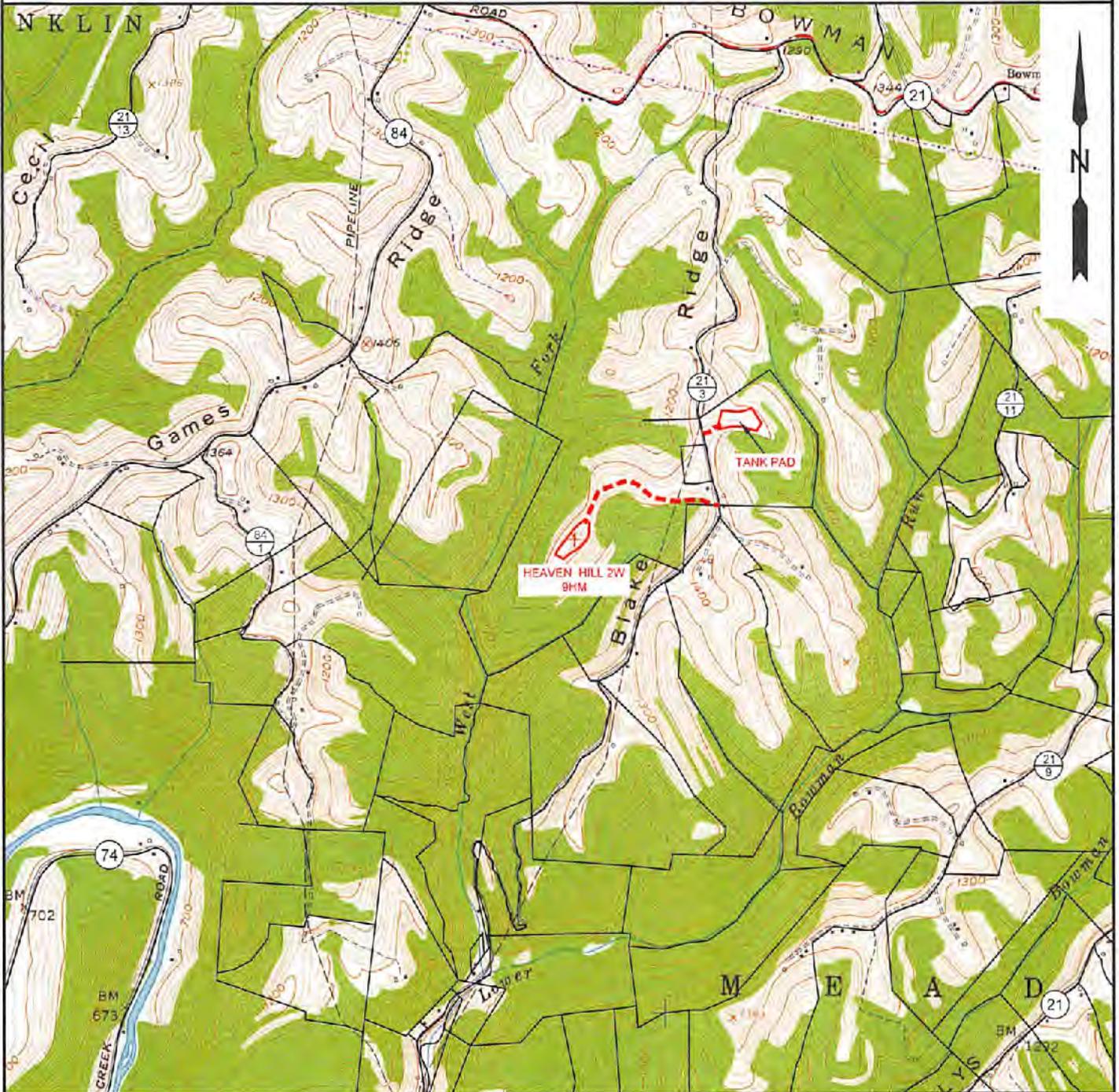
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WV Department of
Environmental Protection

09/22/2017

PROPOSED HEAVEN HILL 2W - 9HM



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

LAT: 38.7137712
LON: -80.8258327
LOCATED: S 42°57'59" W AT 47,265' FROM HEAVEN HILL 2W - 9HM SURFACE LOCATION

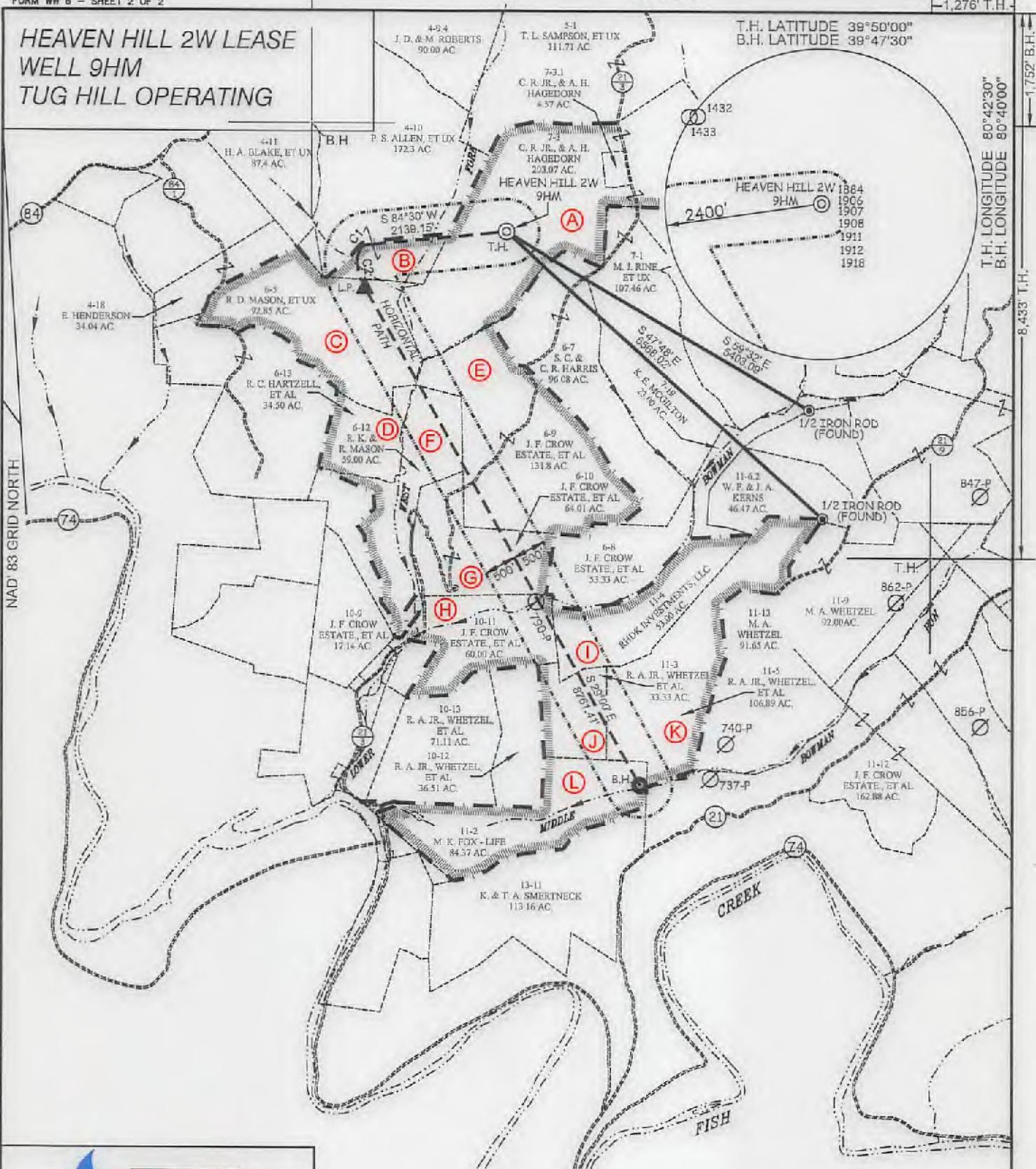
Handwritten signature and date: 7/13/17

 Land & Energy Development Solutions from the ground up. P.O. Box 150 • 12 Vannom Drive • Glenville, WV 26031 • (304) 482-5834 www.slsurveys.com	TOPO SECTION: GLEN EASTON 7.5'		OPERATOR: PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		 TUG HILL RECEIVED OFF OPERATING
	COUNTY	DISTRICT	DATE	SCALE	
	MARSHALL	MEADE	07/13/2017	1" = 2000'	
	DRAWN BY	JOB NO.			
		K.G.M.	8703		

JUL 19 2017

09/22/2017

**HEAVEN HILL 2W LEASE
WELL 9HM
TUG HILL OPERATING**



T.H. LONGITUDE 80°42'30"
B.H. LONGITUDE 80°40'00"
1,752' B.H.
8,433' T.H.

NAD'83 GRID NORTH



Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenview, WV 26351 • (204) 462-6034
www.slsurvey.com

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	258.45'	185.47'	79°50'37"	S 42°11' W	238.04'
C2	502.20'	760.58'	37°49'54"	S 13°09' E	493.13'

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

NAD 83 S.P.C.(FT)	N. 479,510.20	E. 1,627,787.33
NAD 83 GEO.	LAT-(N) 39.810184	LONG-(W) 80.712674
NAD 83 UTM (M)	N. 4,408,729.24	E. 524,678.73

LANDING POINT

NAD 83 S.P.C.(FT)	N. 478,648.5	E. 1,625,610.3
NAD 83 GEO.	LAT-(N) 39.807797	LONG-(W) 80.720581
NAD 83 UTM (M)	N. 4,406,455.6	E. 523,917.9

BOTTOM HOLE

NAD 83 S.P.C.(FT)	N. 470,985.0	E. 1,629,856.9
NAD 83 GEO.	LAT-(N) 39.788858	LONG-(W) 80.705101
NAD 83 UTM (M)	N. 4,404,142.5	E. 525,250.6



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

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- LEASE # (SEE PGS. 3,4,5)
- SURFACE OWNER (SEE TABLE)

SCALE 1" = 2000' FILE NO. 8703P9HM.dwg

DATE JULY 17, 20 17

REVISED _____, 20 _____

OPERATORS WELL NO. HEAVEN HILL 2W-9HM

API WELL NO. 47 — 051 — 01951

STATE COUNTY PERMIT

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

WELL OPERATOR TUG HILL OPERATING, LLC	DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500	ADDRESS CT CORPORATION SYSTEM
FORT WORTH, TX 76107	5400 D BIG TYLER ROAD
	CHARLESTON, WV 25313

09/22/2017

COUNTY NAME PERMIT

**HEAVEN HILL 2W LEASE
WELL 9HM
TUG HILL OPERATING**

T.H. LATITUDE 38°50'00"
B.H. LATITUDE 39°47'30"

B.H.

T.H. LONGITUDE 80°42'30"
B.H. LONGITUDE 80°40'00"

1,752' B.H.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
NAD83 S.P.C.(FT) N. 479,510.20 E. 1,627,767.93
NAD83 GEO. LAT-(N) 39.810184 LONG-(W) 80.712874
NAD83 UTM (M) N. 4,406,729.24 E. 624,676.73

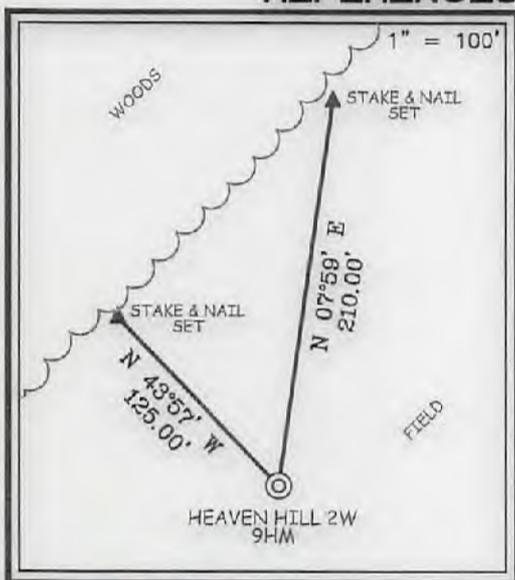
LANDING POINT
NAD83 S.P.C.(FT) N. 478,648.5 E. 1,625,810.3
NAD83 GEO. LAT-(N) 39.807737 LONG-(W) 80.720581
NAD83 UTM (M) N. 4,406,455.6 E. 529,917.9

BOTTOM HOLE
NAD83 S.P.C.(FT) N. 470,885.0 E. 1,629,856.9
NAD83 GEO. LAT-(N) 39.786858 LONG-(W) 80.705101
NAD83 UTM (M) N. 4,404,142.5 E. 525,250.6

NOTES ON SURVEY

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

REFERENCES



Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Deed Book/Page
10*15521	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	722 281
10*15608	A	9-7-3	CHARLES R HAGEDORN JR	816 423
10*47051.073.1	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	888 618
10*47051.073.2	A	9-7-3	PATRIOT RESTORATIONS LLC	908 541
10*47051.073.3	A	9-7-3	TREENERGY HOLDINGS, LLC	878 330
10*17729	B	9-4-10	STEPHEN MENENDEZ	913 66
10*15661	C	9-6-5	CHESTNUT HOLDINGS LLC	839 170
10*15507	D	9-6-13	BAY C. HARTZELL AND CAROL J. HARTZELL, HUSBAND	699 162
10*15510	E	9-6-9	ELAINE PHELPS ET VIR	718 326
10*15511	E	9-6-9	DAVID E CROW	718 376
10*15512	E	9-6-9	FRANCES COFFEY	718 378
10*15513	E	9-6-9	KAY KEYES	718 330
10*15514	E	9-6-9	L PAUL CROW	718 336
10*15515	E	9-6-9	DESIRE L CROW	718 334
10*15516	E	9-6-9	ROSE MARIE KIELGCZEWSKI	718 354
10*15517	E	9-6-9	DIANNE GELLNER & GARY GELLNER	718 345
10*15518	E	9-6-9	JAMES P HOLIDAY AND JACQUELINE HOLIDAY	718 347
10*15519	E	9-6-9	JOHN CROW	726 582
10*15520	E	9-6-9	TIMOTHY CROW	726 582
10*47051.123.1	E	9-6-9	LLOYD G BAKER	865 389
10*47051.123.2	E	9-6-9	JAMES P HOLIDAY AND JACQUELINE HOLIDAY	873 143
10*15525	F	9-6-12	RONALD KEITH MASON ET UX	772 445
10*15541	F	9-6-12	MARY RUTH FROHNAPFEL	751 312
10*15542	F	9-6-12	KENNETH D SIBURT	751 218
10*15543	F	9-6-12	SANDRA FROWEN	751 307
10*15544	F	9-6-12	VICKI J CHERRY A/K/A VICKIE L CHERRY	753 318
10*15545	F	9-6-12	JAMES B SIBURT ET UX	753 332
10*15546	F	9-6-12	ALAN K SIBURT ET UX	753 325
10*15547	F	9-6-12	ROONEY L SIBURT	753 346
10*15510	G	9-6-10	ELAINE PHELPS ET VIR	718 326
10*15511	G	9-6-10	DAVID E CROW	718 376
10*15512	G	9-6-10	FRANCES COFFEY	718 378
10*15513	G	9-6-10	KAY KEYES	718 330
10*15514	G	9-6-10	L PAUL CROW	718 336
10*15515	G	9-6-10	DESIRE L CROW	718 334
10*15516	G	9-6-10	ROSE MARIE KIELGCZEWSKI	718 354
10*15517	G	9-6-10	DIANNE GELLNER & GARY GELLNER	718 345
10*15518	G	9-6-10	JAMES P HOLIDAY AND JACQUELINE HOLIDAY	718 347
10*15519	G	9-6-10	JOHN CROW	726 582
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10*15510	H	9-10-11	ELAINE PHELPS ET VIR	718 326
10*15511	H	9-10-11	DAVID E CROW	718 376
10*15512	H	9-10-11	FRANCES COFFEY	718 378
10*15513	H	9-10-11	KAY KEYES	718 330
10*15514	H	9-10-11	L PAUL CROW	718 336
10*15515	H	9-10-11	DESIRE L CROW	718 334
10*15516	H	9-10-11	ROSE MARIE KIELGCZEWSKI	718 354
10*15517	H	9-10-11	DIANNE GELLNER & GARY GELLNER	718 345
10*15518	H	9-10-11	JAMES P HOLIDAY AND JACQUELINE HOLIDAY	718 347
10*15519	H	9-10-11	JOHN CROW	726 582
10*15520	H	9-10-11	TIMOTHY CROW	726 582
10*47051.123.1	H	9-10-11	LLOYD G BAKER	865 389
10*47051.123.2	H	9-10-11	JAMES P HOLIDAY AND JACQUELINE HOLIDAY	873 143
10*16517	I	9-11-4	RHDK INVESTMENTS LLC KEITH B KIMBLE	507 550
10*15541	J	9-11-3	VICKIE MASON	680 413
10*15562	J	9-11-3	MARY A SOUTH	682 231
10*15563	J	9-11-3	MARK L WHETZAL	682 244
10*15564	J	9-11-3	RAY A WHETZAL JR	682 548
10*15565	J	9-11-3	ROBERT L WHETZAL	682 552
10*15566	J	9-11-3	SHARON L WHETZAL	682 556
10*47051.108.1	J	9-11-3	MICHAEL A WHETZEL	885 51
10*47051.108.5	J	9-11-3	BRENDA J WHETZEL	885 55
10*47051.108.6	J	9-11-3	TERRI MCCARDE	885 29
10*47051.108.7	J	9-11-3	GARY FRANCIS WHETZAL	885 26
10*15584	K	9-11-5	VICKIE MASON	686 289
10*15585	K	9-11-5	SHARON L WHETZAL	687 147
10*15586	K	9-11-5	MARY A SOUTH	690 615
10*15587	K	9-11-5	ROBERT L WHETZAL	690 559
10*15588	K	9-11-5	RAY A WHETZAL JR	693 571
10*15589	K	9-11-5	MARK L WHETZAL	693 576
10*47051.108.1	K	9-11-5	MICHAEL A WHETZEL	885 51
10*47051.108.5	K	9-11-5	BRENDA J WHETZEL	885 55
10*47051.243.1	L	9-11-2	MARY A FOX	879 332
10*47051.243.2	L	9-11-2	PAUL G FOX	879 335
10*47051.243.3	L	9-11-2	MARK H FOX	879 338
10*47051.243.4	L	9-11-2	DAVID E FOX	876 55
10*47051.243.5	L	9-11-2	LOUIS T FOX	876 58
10*47051.243.6	L	9-11-2	THOMAS J FOX	876 61

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 # 12 Van Horn Drive • Glenville, WV 26031 • (304) 462-9834
www.slsurveys.com

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

P.S. 677
Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JULY 17, 20 17
REVISED _____, 20 _____
OPERATORS WELL NO. HEAVEN HILL 2W-9HM
API WELL NO. 47 - 051 - 01951
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8703P9HM.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: ELEVATION GROUND = 1,360.0' PROPOSED = 1,331.26' WATERSHED WEST FORK OF LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER C.R. JR. & A.H. HAGEDORN ACREAGE 203.07±
ROYALTY OWNER C.R. JR. & A.H. HAGEDORN ET AL (SEE ABOVE) ACREAGE 203.07±

PROPOSED WORK: DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____ OTHER _____
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,879' / TMD: 16,535'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS CT CORPORATION SYSTEM
FORT WORTH, TX 76107 ADDRESS 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Heaven Hill Unit 2W-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

RECEIVED
Office of Oil and Gas

JUL 19 2017

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 *Amy Miller*
 Its: Permitting Specialist - Appalachia Region

Lease Name or N	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15521	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TRIENERGY HOLDINGS, LLC	1/8+	722 281	TriEnergy to NPAR: 24/196	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15608	A	9-7-3	CHARLES R HAGEDORN JR	CHEVRON U.S.A. INC.	1/8+	816 423	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.073.1	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TH EXPLORATION LLC	1/8+	888 618	N/A	N/A	N/A
10*47051.073.2	A	9-7-3	PATRIOT RESTORATIONS LLC	TH EXPLORATION LLC	1/8+	908 541	N/A	N/A	N/A
10*47051.073.3	A	9-7-3	TRIENERGY HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	878 330	N/A	N/A	N/A
10*17229	B	9-4-10	STEPHEN MENENDEZ	TH EXPLORATION LLC	1/8+	913 66	N/A	N/A	N/A
10*15661	C	9-6-5	CHESTNUT HOLDINGS LLC	REPUBLIC ENERGY VENTURES LLC	1/8+	839 170	N/A	Republic to Chevron: 32/415	Chevron to Tug Hill: 36/148
10*15507	D	9-6-13	RAY C. HARTZELL AND CAROL J. HARTZELL, HUSBAND	AB RESOURCES LLC	1/8+	689 162	AB Res. to Chief: 24/382	Chief to Chevron: 25/1	Chevron to Tug Hill: 36/148
10*15510	E	9-6-9	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15511	E	9-6-9	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15512	E	9-6-9	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15513	E	9-6-9	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15514	E	9-6-9	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15515	E	9-6-9	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15516	E	9-6-9	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15517	E	9-6-9	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15518	E	9-6-9	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15519	E	9-6-9	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15520	E	9-6-9	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*47051.123.1	E	9-6-9	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*47051.123.2	E	9-6-9	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A
10*15525	F	9-6-12	RONALD KEITH MASON ET UX	CHEVRON U.S.A. INC.	1/8+	772 445	N/A	N/A	Chevron to Tug Hill: 36/148
10*15541	F	9-6-12	MARY RUTH FROHNAPFEL	CHEVRON U.S.A. INC.	1/8+	781 312	N/A	N/A	Chevron to Tug Hill: 36/148
10*15542	F	9-6-12	KENNETH D SIBURT	CHEVRON U.S.A. INC.	1/8+	781 218	N/A	N/A	Chevron to Tug Hill: 36/148
10*15543	F	9-6-12	SANDRA FROWEN	CHEVRON U.S.A. INC.	1/8+	781 307	N/A	N/A	Chevron to Tug Hill: 36/148
10*15544	F	9-6-12	VICKI J CHERRY A/K/A VICKIE L CHERRY	CHEVRON U.S.A. INC.	1/8+	793 318	N/A	N/A	Chevron to Tug Hill: 36/148
10*15545	F	9-6-12	JAMES B SIBURT ET UX	CHEVRON U.S.A. INC.	1/8+	793 332	N/A	N/A	Chevron to Tug Hill: 36/148
10*15546	F	9-6-12	ALAN K SIBURT ET UX	CHEVRON U.S.A. INC.	1/8+	793 325	N/A	N/A	Chevron to Tug Hill: 36/148
10*15547	F	9-6-12	RODNEY L SIBURT	CHEVRON U.S.A. INC.	1/8+	793 346	N/A	N/A	Chevron to Tug Hill: 36/148
10*15510	G	9-6-10	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15511	G	9-6-10	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15512	G	9-6-10	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15513	G	9-6-10	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15514	G	9-6-10	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15515	G	9-6-10	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15516	G	9-6-10	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15517	G	9-6-10	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15518	G	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15519	G	9-6-10	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15520	G	9-6-10	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*47051.123.1	G	9-6-10	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*47051.123.2	G	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A
10*15510	H	9-10-11	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15511	H	9-10-11	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15512	H	9-10-11	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15513	H	9-10-11	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15514	H	9-10-11	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15515	H	9-10-11	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15516	H	9-10-11	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15517	H	9-10-11	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15518	H	9-10-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15519	H	9-10-11	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15520	H	9-10-11	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*47051.123.1	H	9-10-11	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*47051.123.2	H	9-10-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A

047-051-01951

Case Name or N	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment
0*16517	I	9-11-4	RHDK INVESTMENTS LLC KEITH B KIMBLE	TH EXPLORATION LLC	1/8+	907	550	N/A	N/A	N/A
0*15561	J	9-11-3	VICKIE MASON	CHESAPEAKE APPALACHIA LLC	1/8+	680	413	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15562	J	9-11-3	MARY A SOUTH	CHEVRON U.S.A. INC.	1/8+	682	231	N/A	N/A	Chevron to Tug Hill: 36/148
0*15563	J	9-11-3	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682	544	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15564	J	9-11-3	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	682	548	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15565	J	9-11-3	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682	552	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15566	J	9-11-3	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682	556	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*47051.108.1	J	9-11-3	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885	51	N/A	N/A	N/A
0*47051.108.5	J	9-11-3	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885	55	N/A	N/A	N/A
0*47051.108.6	J	9-11-3	TERRI MCCARDLE	TH EXPLORATION LLC	1/8+	895	23	N/A	N/A	N/A
0*47051.108.7	J	9-11-3	GARY FRANCIS WHETZAL	TH EXPLORATION LLC	1/8+	895	26	N/A	N/A	N/A
0*15584	K	9-11-5	VICKIE MASON	CHEVRON U.S.A. INC.	1/8+	686	239	N/A	N/A	Chevron to Tug Hill: 36/148
0*15585	K	9-11-5	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	687	147	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15586	K	9-11-5	MARY A SOUTH	CHEVRON U.S.A. INC.	1/8+	690	615	N/A	N/A	Chevron to Tug Hill: 36/148
0*15587	K	9-11-5	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	690	559	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15588	K	9-11-5	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	693	571	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*15589	K	9-11-5	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	693	576	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
0*47051.108.1	K	9-11-5	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885	51	N/A	N/A	N/A
0*47051.108.5	K	9-11-5	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885	55	N/A	N/A	N/A
0*47051.243.1	L	9-11-2	MARY A FOX	TH EXPLORATION LLC	1/8+	879	332	N/A	N/A	N/A
0*47051.243.2	L	9-11-2	PAUL G FOX	TH EXPLORATION LLC	1/8+	879	335	N/A	N/A	N/A
0*47051.243.3	L	9-11-2	MARK H FOX	TH EXPLORATION LLC	1/8+	879	338	N/A	N/A	N/A
0*47051.243.4	L	9-11-2	DAVID E FOX	TH EXPLORATION LLC	1/8+	876	55	N/A	N/A	N/A
0*47051.243.5	L	9-11-2	LOUIS T FOX	TH EXPLORATION LLC	1/8+	876	58	N/A	N/A	N/A
0*47051.243.6	L	9-11-2	THOMAS J FOX	TH EXPLORATION LLC	1/8+	876	61	N/A	N/A	N/A

047-051-01951

AFFIDAVIT

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

JURAT

STATE OF TEXAS §
§ SS
COUNTY OF TARRANT §

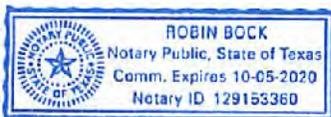
Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish.

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



Carol S. Haight
JURAT County 10:29:27 AM
Instrument No 212093
Date Recorded 10/20/2016
Document Type AFFIDAVIT
Pages Recorded 1
Book-Page 119-291
Recording Fee \$5.00
Additional \$0.00



July 14, 2017

Jacob Velasco
Chevron North America Exploration and Production Company
Appalachian/Michigan Business Unit
700 Cherrington Pkwy
Coraopolis, PA 15108

Re: Permitting Agreement
Chevron U.S.A., Inc. Oil and Gas Lease
Heaven Hill 2 West Unit
Marshall County, West Virginia

Mr. Velasco

Tug Hill Operating, LLC ("THQ") is requesting permission from Chevron U.S.A. Inc. ("Chevron") to proceed with permitting the Heaven Hill 2 West-9HM, 12HU, 10HM, 13HU, and 11HM horizontal wells through the following oil and gas leases: (1) that certain Oil and Gas Lease dated September 14, 2015 between Paul Steven Allen Et ux, as Lessors, and Chevron U.S.A. Inc., as Lessee, covering lands in the Meade District of Marshall County which are identified as being Tax Parcel Number 9-4-10 and evidenced by a Memorandum of Oil and Gas Lease recorded in the records of the Clerk of the County Commission of Marshall County at Book 882, Page 389 (the "Oil and Gas Lease").

By countersigning this letter and the enclosed Memorandum of Agreement, Chevron does not waive any rights in and to the Oil and Gas Leases nor is Chevron making any representations or warranties to THQ regarding the Oil and Gas Leases. Chevron is not bound to complete any transaction with THQ regarding the Oil and Gas Lease and nothing in this letter or the Memorandum of Agreement shall be construed as giving THQ, or any of its affiliates, the right to drill through, produce or operate under the Oil and Gas Leases. This letter regards only the right to permit the wells identified above and will expire one hundred eighty (180) days from the date of execution by Chevron or upon assignment of the Oil and Gas Leases by Chevron to a non-affiliated entity or person. Regardless of the date stated below, this letter will become effective upon execution by both parties.

If you are in agreement, please have executed on the behalf of Chevron one original each of this letter and the Memorandum of Agreement and return both to my attention at the address below. If you have any questions, please feel free to contact me at either (817) 632-5200 or swillis@tug-hilop.com

Thank you for your consideration of this matter.

Regards,

09/22/2017

Tug Hill Operating, LLC

Sean Willis

Agreed to the 14th day of July, 2017 by:

Tug Hill Operating, LLC

By: S.K. Willis

Name: Sean Willis

Title: VP, Engineering & Development Manager- Appalachia Region

Chevron U. S. A., Inc.

By: Michael Walker

Name: MICHAEL WALKER

Title: ATTORNEY-IN-FACT

COPY

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into this 14th day of July 2017, between **TUG HILL OPERATING, LLC (THQ)**, a Texas limited liability company, whose address is 1320 S. University Blvd., Suite 500, Fort Worth, TX 76107 and **CHEVRON U.S.A., INC. (Chevron)**, whose address is 700 Cherrington Pkwy, Coraopolis, PA 15108.

PARTIES AND AGREEMENT REFERENCE: THQ and Chevron entered into a letter agreement ("Letter Agreement") dated July 14, 2017 (the "Commencement Date") outlining Chevron's intent to allow THQ to obtain permits to develop those certain oil and gas interests controlled by Chevron in the Meade District of Marshall County, West Virginia, dated September 14, 2015, and of record in Book 882, Page 389, in the Office of the Clerk of the County Commission of the aforesaid County and State.

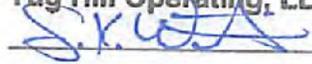
Parcel Number: 9-4-10

1. **TERM:** The rights granted in the Letter Agreement will terminate upon the earlier of (i) one hundred eighty (180) days from the Commencement Date, or (ii) Chevron assigning the rights to the leases to a non-affiliated entity or person.

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

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

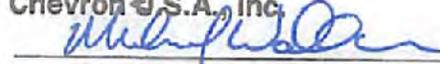
Tug Hill Operating, LLC



By: Sean Willis

Its: VP, Engineering &
Development Manager - Appalachia

Chevron U.S.A., Inc.



By: MICHAEL WALKER

Its: ATTORNEY-IN-FACT

Marshall County
Jan Pest, Clerk
Instrument 1427086
07/17/2017 @ 02:25:52 PM
AGREEMENT
Book 932 @ Page 552
Pages Recorded 2
Recording Cost \$ 11.00

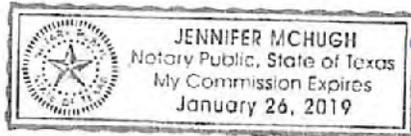
Prepared by Tug Hill Operating, LLC
1320 S. University Dr., Suite 500, Fort Worth, TX 76107

COPY

STATE OF Texas ;
COUNTY OF Tarrant :

Before me, Jennifer McHugh, a Notary Public, on this day personally appeared Sean Willis, known to me to be the VP Engineering & Development of MGR Tug Hill Operating LLC (THO), subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 14th day of July, 2017. My Commission expires: 1-26-2019.

[SEAL]

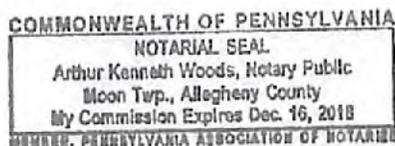


Jennifer McHugh
Notary Public

STATE OF Pennsylvania ;
COUNTY OF Allegheny :

Before me, Arthur Kenneth Woods, a Notary Public, on this day personally appeared Michael Walker, known to me to be the Attorney-in-Fact of Chevron U.S.A., Inc., subscribed to the foregoing instrument, and acknowledged to me that he/she executed the instrument for the purposes and consideration therein expressed as his/her free act and deed. Given under my hand and seal of office this 14th day of July, 2017. My Commission expires: 12/16/18.

[SEAL]



Arthur Kenneth Woods
Notary Public



July 11, 2017

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

RE: Heaven Hill Unit 2W-9HM

Subject: County Route 21/3 and County Route 21/9 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21/3 and County Route 21/9 in the area reflected on the Heaven Hill Unit 2W-9HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Route and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me 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". The signature is fluid and cursive.

Amy L. Miller
Permit Specialist – Appalachia Region
Cell 304-376-0111
Email: amiller@tug-hilop.com

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

Date of Notice Certification: 07/17/2017

API No. 47- 051 -
Operator's Well No. Heaven Hill Unit 2W-9HM
Well Pad Name: Heaven Hill Unit 2

Notice has been given:

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

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>524,576.73</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,729.24</u>
District:	<u>Meade</u>	Public Road Access:	<u>Blake Ridge Road (Co. Rt. 21/3)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Charles R. Hagedorn, Jr., et ux</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
--	---

Required Attachments:

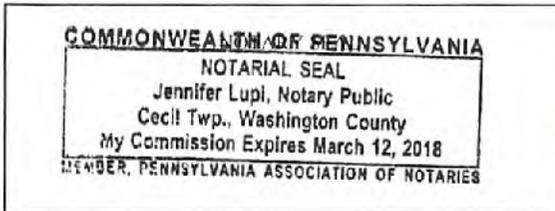
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

Certification of Notice is hereby given:

THEREFORE, I Amy L. Miller 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
Its: Permitting Specialist - Appalachia
Telephone: 724-338-2026

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



Subscribed and sworn before me this 17th day of July, 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

Oil and Gas Privacy Notice:

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

**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: 7/13/2017 **Date Permit Application Filed:** 7/14/2017

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: Charles R. Hagedorn, Jr., ex ux
 Address: 78 Hagedorn Drive
Glen Easton, WV 26039
 Name: None
 Address: _____

COAL OWNER OR LESSEE
 Name: Murray Energy Corporation
 Address: 46226 National Road
St. Clairsville, OH 43950

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

SURFACE OWNER(s) (Road and/or Other Disturbance)
 Name: Michael J. Rine, et ux
 Address: 1466 Blake Ridge Road
Glen Easton, WV 26039
 Name: None
 Address: _____

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

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

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

*Please attach additional forms if necessary

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

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.

WW-6A
(8-13)

047-051-01951
API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill Unit 2W9HM
Well Pad Name: Heaven Hill Unit 2

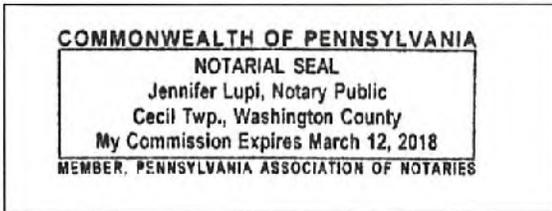
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-338-2026
Email: amiller@tug-hill-op.com *any Miller*

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 13th day of July 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

WW-6A

Supplement Pg. 1A

December 13, 2016
 Tug Hill Operating, LLC
 380 Southpointe BLVD
 Suite 200
 Canonsburg, PA 15317

WATER WELL REPORT

Well: Heaven Hill Unit 2W-9HM
 District: Meade
 County: Marshall
 State: WV

There appears to be No (6) possible water sources within 2,000 feet of the above referenced well location.

House 1 TM 07 Par. 3.1 Charles R. Hagedorn Jr., et ux ✓ Phone 304-845-7332 78 Hagedorn Rd. Glen Easton, WV 26039	House 2 ✓ TM 07 Par. 3.1 Charles R. Hagedorn Jr., et ux Phone 304-845-7332 78 Hagedorn Rd. Glen Easton, WV 26039	House 3 ✓ TM 07 Par. 3 Charles R. Hagedorn Jr., et ux ✓ Phone 304-845-7332 78 Hagedorn Rd. Glen Easton, WV 26039
House 4 ✓ TM 07 Par. 1 Michael Rine, et ux ✓ Phone 304-845-4437 1466 Blake Ridge Road Glen Easton, WV 26039	Spring with House 4 ✓ TM 07 Par. 1 ✓ Michael Rine, et ux ✓ Phone 304-845-4437 1466 Blake Ridge Road Glen Easton, WV 26039	House 5 ✓ TM 06 Par. 07 Scott & Carolyn Harris ✓ Phone 304-845-0747 1944 Blake Ridge Road Glen Easton, WV 26039

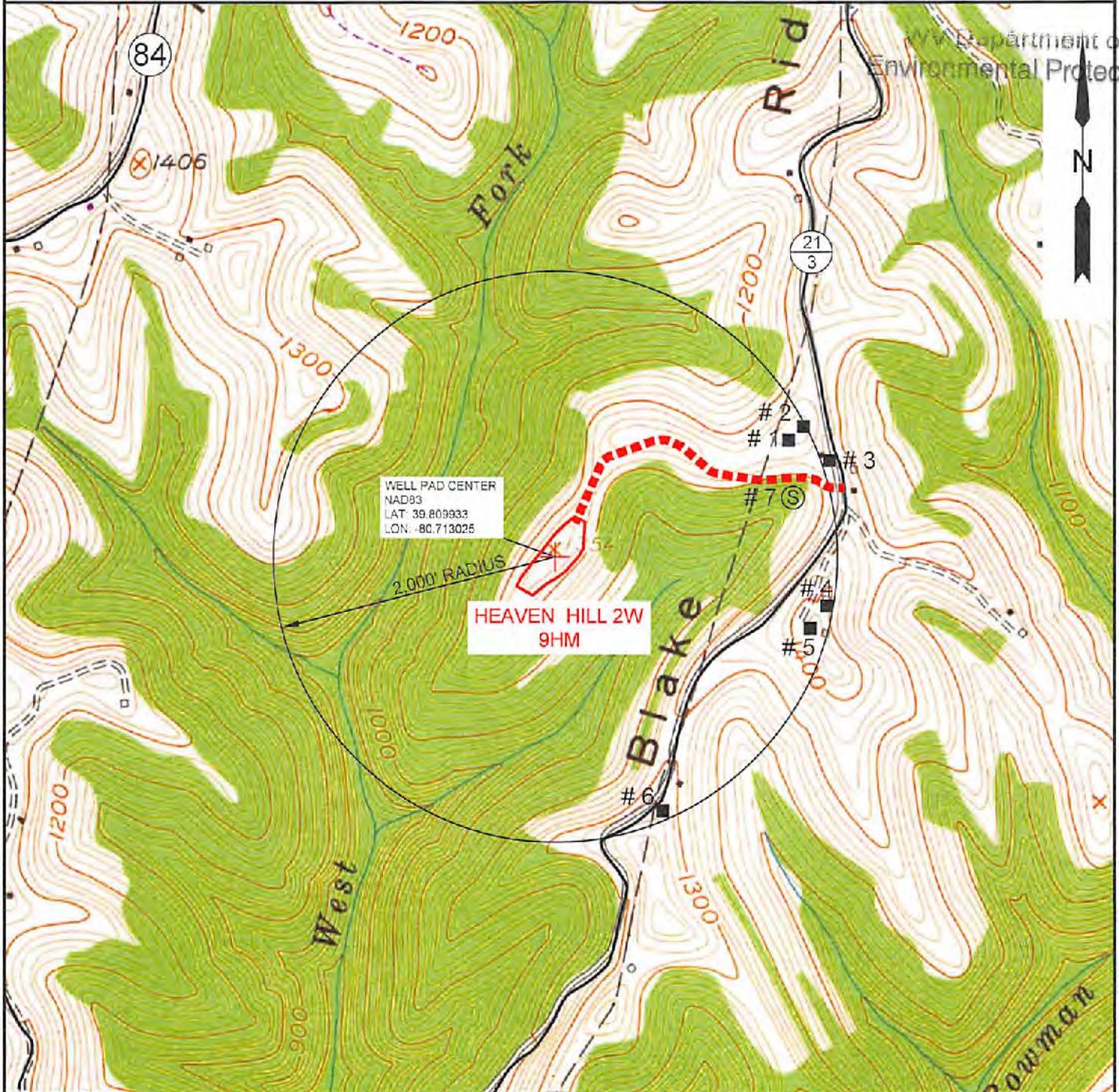
WW-6A

PROPOSED HEAVEN HILL 2W - 9HM

RECEIVED
SUPPLEMENT PG. 1B
Office of Oil and Gas

JUL 18 2017

WV Department of
Environmental Protection



NOTE: THERE APPEARS TO BE SEVEN (7) POSSIBLE WATER SOURCES WITHIN 2,000'.

LEGEND: (S) = SPRING ■ = RESIDENCE

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Van Horn Drive • Glenville, WV 26031 • (304) 482-9934
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8703	07/13/2017	1" = 1000'

TUG HILL
OPERATING

09/22/2017

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: April 06, 2017 **Date of Planned Entry:** April 13, 2017

RECEIVED
Office of Oil and Gas

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

JUL 19 2017

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

WV Department of
Environmental Protection

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: Charles R. Hagedorn, Jr., et ux /

Address: 78 Hagedorn Drive
Glen Easton, WV 26039

Name: Michael J. Rine /

Address: 1486 Blake Ridge Road
Glen Easton, WV 26039

Name: None

Address: _____

COAL OWNER OR LESSEE

Name: Murray Energy Corporation /

Address: 46226 National Road
St. Clairsville, OH 43950

MINERAL OWNER(S)

Name: JMK Irrevocable Trust /

Address: 600 Texas Street, Suite 101
Fort Worth, TX 76102

*please attach additional forms if necessary

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>LAT: 39.8099328, LON: -80.7130249</u>
County: <u>Marshall</u>	Public Road Access: <u>Blake Ridge Road (Co. Rt. 21/3)</u>
District: <u>Meade</u>	Watershed: <u>HUC-10 Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Charles R. Hagedorn</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: 724-749-0308

Email: jwhite@tug-hillop.com

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317

Facsimile: 724-338-2930

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.

Operator Well No. Heaven Hill 2W-9HM

WW-6A3 Notice of Entry for Plat Survey

Attachment 1 of 1

Mineral Owner(s):

Name: Marcellus TX Minerals Partners, LTD
Address: 307 W 7th St.
Fort Worth, TX 76102

Name: Purpleburgh Ventures, LLC
Address: 306 W 7th St.
Fort Worth, TX 76102

Name: Charles R. Hagedorn, Jr., et ux
Address: 78 Hagedorn Drive
Glen Easton, WV 26039

Name: Venango 21st Century
Address: 301 Moon Clinton Road
Moon Township, PA 15108

Name: TriEnergy Holdings, LLC
Address: 412 Beaver Street, 2nd Floor
Sewickley, PA 15143

Name: Patriot Restoration
Address: 713 Sycamore Road Extension
Sewickley, PA 15143

Name: Ralph E. Wellman
Address: 2209 Bowman Ridge Rd.
Glen Easton, WV 26039

RECEIVED
Office of Oil and Gas

JUL 19 2017

WV Department of
Environmental Protection

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

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

Date of Notice: 07/11/2017

Date Permit Application Filed: 07/14/2017

RECEIVED
Office of Oil and Gas

JUL 19 2017

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

HAND
DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

Name: Charles R. Hagedorn, Jr., et ux

Address: 78 Hagedorn Drive

Glen Easton, WV 26039

Name: Michael J. Rine, et ux

Address: 1466 Blake Ridge Road

Glen Easton, WV 26039

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>524,576.73</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,729.24</u>
District:	<u>Maede</u>	Public Road Access:	<u>Blake Ridge Road (Co. Rt. 21/3)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Charles R. Hagedorn, Jr., et ux</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

This Notice Shall Include:

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

Well Operator: Tug Hill Operating, LLC

Telephone: 724-338-2026

Email: amiller@tug-hillop.com

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200

Cencsburg, 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.

09/22/2017



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Jim Justice
 Governor

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

RECEIVED
 Office of Oil and Gas

April 10, 2017

JUL 19 2017

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

WV Department of
 Environmental Protection

Subject: DOH Permit for the Heaven Hills Unit 2 Pad, Marshall County
 Heaven Hills Unit 2W-9HM Well site

47-051-01951

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2016-0284 & 0287 which have been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/3 SLS.

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

Very Truly Yours,

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

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

09/22/2017



TUG HILL

4705101951

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Office of Oil and Gas

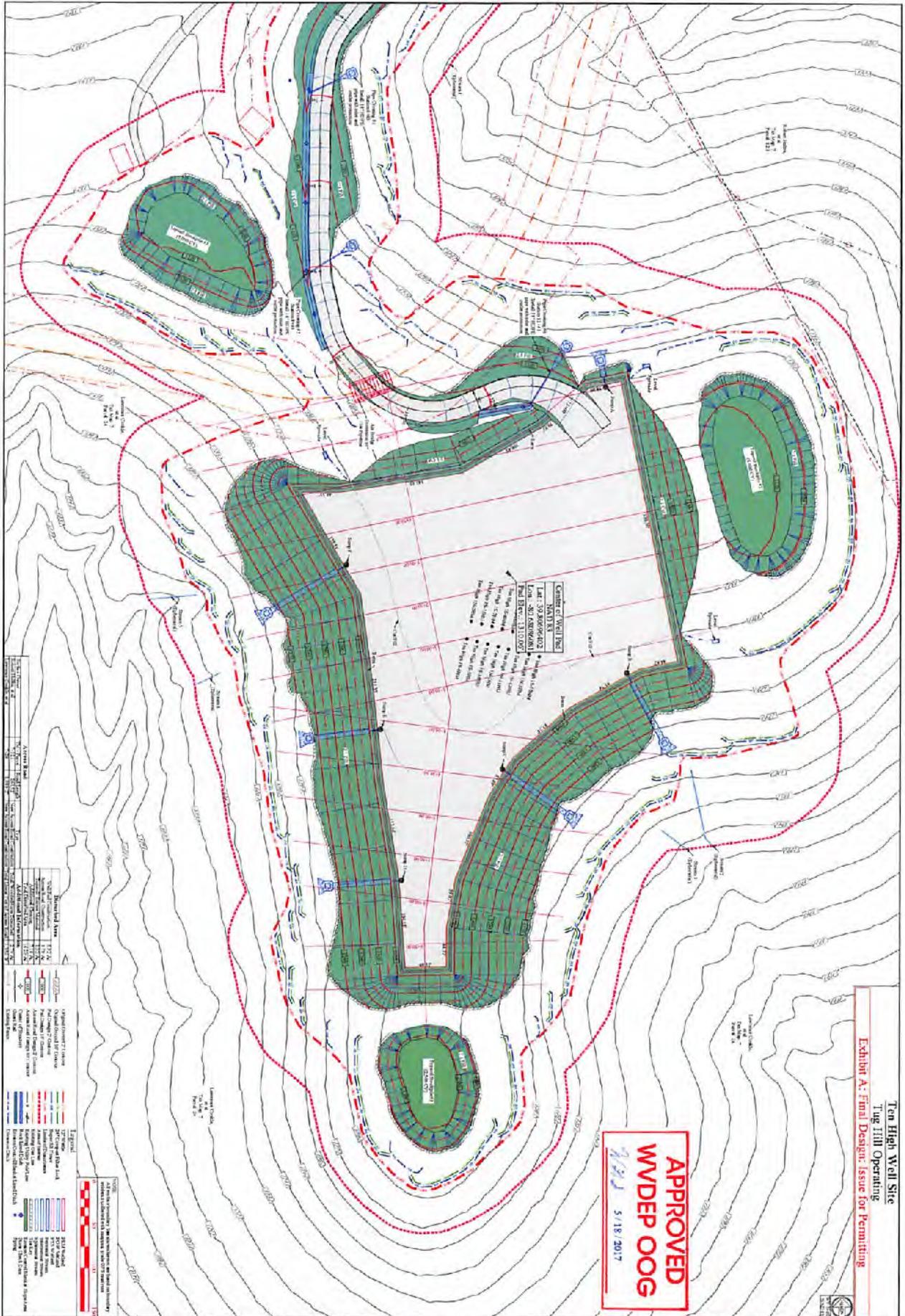
JUL 16 2017

WV Department of
Environmental Protection

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill Unit 2W-9HM

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



Ten High Well Site
 Tug Hill Operating
 Exhibit A: Final Design, Issue for Permitting

APPROVED
WVEDP 006
 5/18/2017

Legend	
	Standard Road
	Proposed Road
	Utility Line
	Contour Line
	Well Path
	Well Pad
	Elevation Spot
	Spot Elevation
	Proposed Structure
	Existing Structure
	Proposed Foundation
	Existing Foundation
	Proposed Drilling Area
	Existing Drilling Area
	Proposed Wellhead
	Existing Wellhead
	Proposed Valve
	Existing Valve
	Proposed Manhole
	Existing Manhole
	Proposed Structure Foundation
	Existing Structure Foundation
	Proposed Wellhead Foundation
	Existing Wellhead Foundation
	Proposed Valve Foundation
	Existing Valve Foundation
	Proposed Manhole Foundation
	Existing Manhole Foundation

Site Plan
 Ten High Well Site
 Meade District
 Marshall County, WV

Key-Scan
 THE OPERATING
 MEMBERSHIP
 TUG HILL
 OPERATING

Rev	Revised By	Revised Date	Revision
01	WV-0001	05/18/2017	Design
02	WV-0001	05/18/2017	Design

09/22/2017