



west virginia department of environmental protection

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

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

Tuesday, May 22, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for HEAVEN HILL 3N-10HU
47-051-02016-00-00

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 3N-10HU
Farm Name: RICKY L. WHITLATCH
U.S. WELL NUMBER: 47-051-02016-00-00
Horizontal 6A New Drill
Date Issued: 5/22/2018

PERMIT CONDITIONS

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

PERMIT CONDITIONS

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

CONDITIONS

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



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

May 3, 2018

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

RE: Application for Deep Well Permit – API #47-051-02016

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Heaven Hill 3N-10HU

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

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

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

1. Comments to Notice of Deviation filed? No.
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: 47-051-01960, 47-051-01961, 47-051-01967, 47-051-1968, 47-051-01969, 47-051-01910, 47-051-01911, 47-051-01912, 47-051-01952, and 47-051-01957
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

A handwritten signature in blue ink that reads "Susan Rose".

Susan Rose
Administrator

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 3N-10HU Well Pad Name: Heaven Hill 3

3) Farm Name/Surface Owner: Ricky L. Whitlatch Public Road Access: Yeater Land CR 21/11

4) Elevation, current ground: 1328' Elevation, proposed post-construction: 1328'

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

(b) If Gas Shallow Deep
Horizontal

5/17/18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,620' - 11,748' thickness of 128' and anticipated pressure of approx. 7500 psi

8) Proposed Total Vertical Depth: 11,898'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 17,471'

11) Proposed Horizontal Leg Length: 4,817'

12) Approximate Fresh Water Strata Depths: 70', 1038'

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

14) Approximate Saltwater Depths: 2,167'

15) Approximate Coal Seam Depths: Sewickly Coal - 946' and Pittsburgh Coal - 1031'

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: 1031' TVD and 308' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1,120'	1,120'	1794ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,875'	2,875'	2033ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	47#	11,038'	11,038'	3600ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	17,471'	17,471'	4190ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		12,063'	
Liners							

5/17/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE#24	1.18
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

WW-6B
(10/14)

API NO. 47-051 - 02016
OPERATOR WELL NO. Heaven Hill 3N-10HU
Well Pad Name: Heaven Hill 3

J
5/17/18

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

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

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

Well to be completed with approximately 12,042,500 lb proppant and 186,186 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 18.43

22) Area to be disturbed for well pad only, less access road (acres): 7.15

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

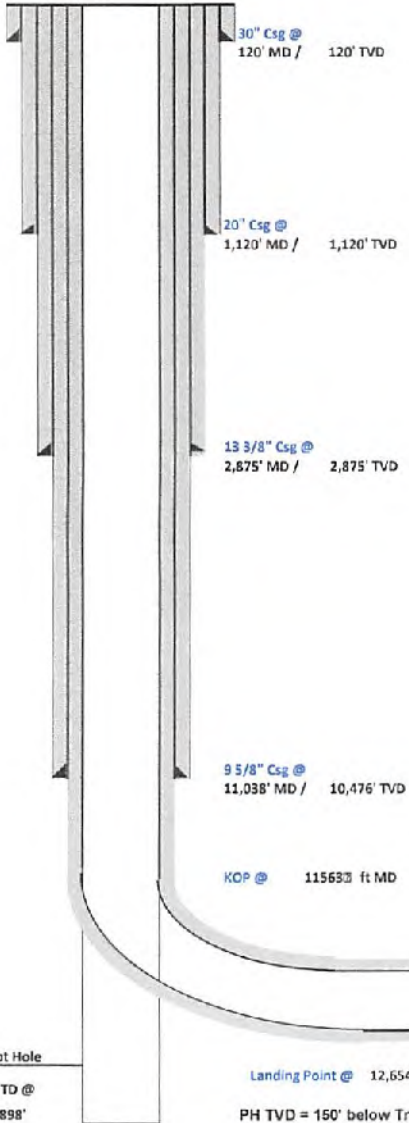
Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH

*Note: Attach additional sheets as needed.

51-02016



WELL NAME: Heaven Hill 3N-10HU
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,326' GL Elev: 1,326'
 TD: 17,471'
 TH Latitude: 39.808664
 TH Longitude: -80.693348
 BH Latitude: 39.81372899
 BH Longitude: -80.705752



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,038'
Sewickley Coal	946'
Pittsburgh Coal	1,031'
Big Lime	2,196'
Berea	2,759'
Tully	6,697'
Marcellus	6,808'
Oronoga	6,859'
Salina	7,565'
Lockport	8,569'
Utica	11,358'
Point Pleasant	11,620'
Landing Depth	11,667'
Trenton	11,748'
Pilot Hole TD	11,898'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	1,120'	1,120'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,875'	2,875'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	11,038'	10,476'	47	HP110	Surface
Production	8 1/2	5 1/2	17,471'	11,583'	23	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,937	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,202	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,899	A	14.5	Air	1 Centralizer every other jt
Production	3,587	A	15	Air / SOB/M	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc

Pilot Hole
 PH TD @
 11,898'

Landing Point @ 12,654' MD / 11,667' TVD
 PH TVD = 150' below Trenton Top

Lateral TD @ 17,471' ft MD
 11,583' ft TVD

SI-02016



Tug Hill Operating, LLC Casing and Cement Program

Heaven Hill 3N-10HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,120'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,875'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	11,038'	CTS
Production	5 1/2"	P110	8 1/2"	17,471'	CTS

Cement

Surface:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
Intermediate 1:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2
Intermediate 2:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99
Production:	50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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

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

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

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51-02016

Permit well - Heaven Hill 3N-10HU

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101935	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101962	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101963	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101947	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101948	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled

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4705140022

51-02016

CR 211

MARSHALL MEADE

CR 211

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 3N - 10HU
- 500 Ft. Buffer
- Counties
- Districts

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Heaven Hill 3N-10HU Meade District Marshall County, WV



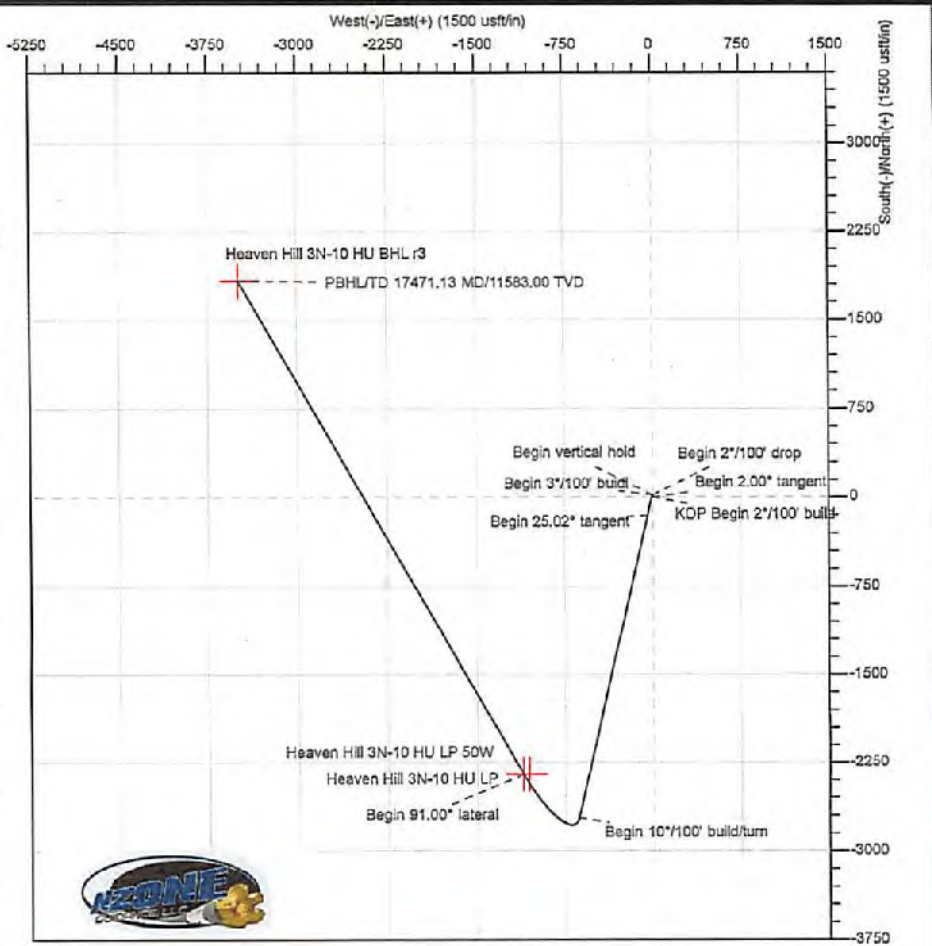
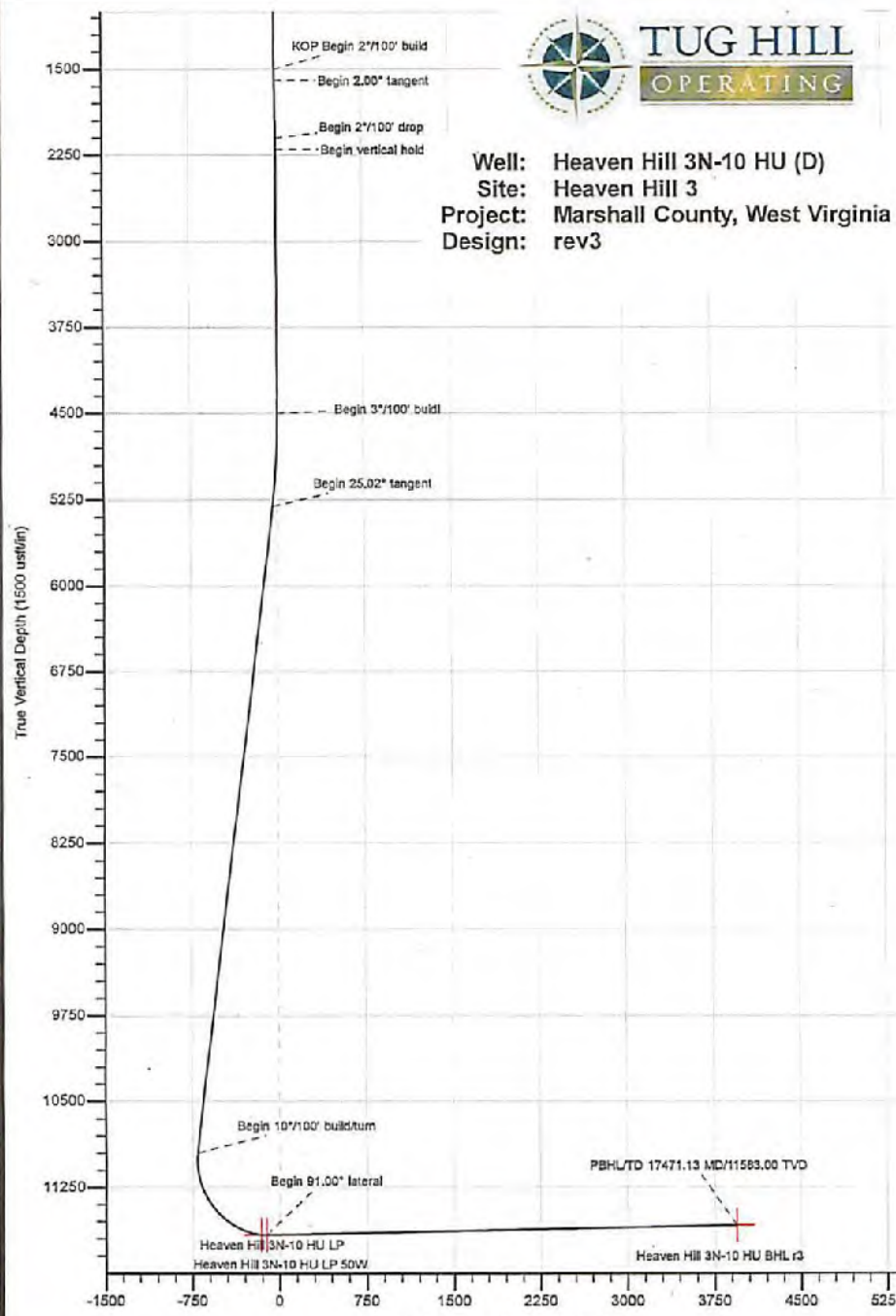
Map Created: February 13, 2018
User: C:\msdcs\cc\p\m... 1/4 2018

Notes:
All locations are approximate and are for visualization purposes only.

51-02014



Well: Heaven Hill 3N-10 HU (D)
 Site: Heaven Hill 3
 Project: Marshall County, West Virginia
 Design: rev3



SECTION DETAILS

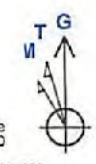
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Diag	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'100' build
3	1500.00	2.00	0.00	1599.68	1.76	0.00	2.00	0.00	0.61	Begin 2.00° tangent
4	2100.00	2.00	0.00	2099.68	19.19	0.00	0.00	0.00	8.92	Begin 2'100' drop
5	2200.00	0.00	0.00	2199.65	20.94	0.00	2.00	190.00	9.73	Begin vertical hold
6	4500.35	0.00	0.00	4500.00	-20.94	0.00	0.00	0.00	9.73	Begin 3'100' build
7	5334.44	25.02	163.00	5307.83	-163.73	-40.33	3.00	193.00	-35.77	Begin 25.02° tangent
8	11563.36	25.02	163.00	10952.09	-2720.88	-833.18	0.00	0.00	-704.54	Begin 10'100' build/turn
9	12654.16	91.00	330.36	11687.00	-2353.35	-1107.52	10.00	134.22	-113.69	Begin 91.00° lateral
10	17471.13	91.00	330.36	11583.00	1832.62	-3489.50	0.00	0.00	3941.46	PBHL/TD 17471.13 MD/11583.00 TVD

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

System Datum: Mean Sea Level
 Depth Reference: GL @ 1326.00ust

Northing: 14457209.00 Easting: 1726534.14 Latitude: 39.80865400 Longitude: -80.69334800

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 6.92°



Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -6.62°

Magnetic Field
 Strength: 52107.8nT
 Dip Angle: 66.62°
 Date: 2/6/2018
 Model: IGRF2015



Planning Report - Geographic

Database:	DB_Jul2216d_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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

Site	Heaven Hill 3				
Site Position:	Northing:	14,457,178.77 usft	Latitude:	39.80858060	
From: Lat/Long	Easting:	1,728,571.98 usft	Longitude:	-80.69321360	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Heaven Hill 3N-10 HU (D)					
Well Position	+N/-S	0.00 usft	Northing:	14,457,209.01 usft	Latitude:	39.80866400
	+E/-W	0.00 usft	Easting:	1,728,534.14 usft	Longitude:	-80.69334800
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:	1,326.00 usft		

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/9/2018	-8.72	66.92	52,107.76438202

Design	rev3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	297.71

Plan Survey Tool Program	Date 4/8/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,471.13 rev3 (Original Hole)	MWD MWD - Standard	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	2.00	0.01	1,599.98	1.75	0.00	2.00	2.00	0.00	0.01	
2,100.00	2.00	0.01	2,099.88	19.19	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.01	2,199.65	20.94	0.00	2.00	-2.00	0.00	160.00	
4,500.35	0.00	0.01	4,500.00	20.94	0.00	0.00	0.00	0.00	0.01	
5,334.44	25.02	193.00	5,307.84	-153.73	-40.33	3.00	3.00	-20.02	193.00	
11,583.36	25.02	193.00	10,852.09	-2,720.88	-633.16	0.00	0.00	0.00	0.00	
12,654.16	91.00	330.36	11,667.00	-2,353.35	-1,107.52	10.00	6.05	12.59	134.22	Heaven Hill 3N-10 HL
17,471.13	91.00	330.36	11,583.00	1,832.62	-3,469.50	0.00	0.00	0.00	0.00	Heaven Hill 3N-10 HL

51-02016



Planning Report - Geographic

Database:	DB_Jul2216d_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,209.01	1,726,534.14	39.80866400	-80.69334800	
KOP Begin 2"/100' build										
1,600.00	2.00	0.01	1,599.98	1.75	0.00	14,457,210.75	1,726,534.14	39.80866679	-80.69334798	
Begin 2.00° tangent										
1,700.00	2.00	0.01	1,699.92	5.23	0.00	14,457,214.24	1,726,534.14	39.80867838	-80.69334793	
1,800.00	2.00	0.01	1,799.85	8.72	0.00	14,457,217.73	1,726,534.14	39.80868796	-80.69334789	
1,900.00	2.00	0.01	1,899.79	12.21	0.00	14,457,221.22	1,726,534.14	39.80869755	-80.69334785	
2,000.00	2.00	0.01	1,999.73	15.70	0.00	14,457,224.71	1,726,534.14	39.80870713	-80.69334780	
2,100.00	2.00	0.01	2,099.68	19.19	0.00	14,457,228.20	1,726,534.14	39.80871672	-80.69334776	
Begin 2"/100' drop										
2,200.00	0.00	0.01	2,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
Begin vertical hold										
2,300.00	0.00	0.01	2,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,400.00	0.00	0.01	2,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,500.00	0.00	0.01	2,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,599.99	0.00	0.01	2,599.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,699.99	0.00	0.01	2,699.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,799.99	0.00	0.01	2,799.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,899.99	0.00	0.01	2,899.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
2,999.99	0.00	0.01	2,999.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,099.99	0.00	0.01	3,099.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,199.99	0.00	0.01	3,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,299.99	0.00	0.01	3,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,399.99	0.00	0.01	3,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,499.99	0.00	0.01	3,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,599.99	0.00	0.01	3,599.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,699.99	0.00	0.01	3,699.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,799.99	0.00	0.01	3,799.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,899.99	0.00	0.01	3,899.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
3,999.99	0.00	0.01	3,999.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,099.99	0.00	0.01	4,099.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,199.99	0.00	0.01	4,199.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,299.99	0.00	0.01	4,299.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,399.99	0.00	0.01	4,399.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,499.99	0.00	0.01	4,499.65	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
4,500.35	0.00	0.01	4,500.00	20.94	0.00	14,457,229.95	1,726,534.14	39.80872151	-80.69334774	
Begin 3"/100' build										
4,599.99	2.99	193.00	4,599.60	18.41	-0.59	14,457,227.41	1,726,533.55	39.80871456	-80.69334985	
4,699.99	5.99	193.00	4,699.28	10.78	-2.34	14,457,219.79	1,726,531.79	39.80869363	-80.69335622	

05/25/2018



Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 3
 Well: Heaven Hill 3N-10 HU (D)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Heaven Hill 3N-10 HU (D)
 TVD Reference: GL @ 1328.00usft
 MD Reference: GL @ 1326.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,799.99	8.99	193.00	4,798.42	-1.92	-5.28	14,457,207.09	1,726,528.86	39.80865679	-80.69336881
4,899.99	11.99	193.00	4,896.73	-19.65	-9.37	14,457,189.35	1,726,524.76	39.80861012	-80.69339161
4,999.99	14.99	193.00	4,993.99	-42.36	-14.62	14,457,166.83	1,726,519.52	39.80854776	-80.69340058
5,099.99	17.99	193.00	5,089.84	-70.03	-21.01	14,457,138.97	1,726,513.13	39.80847188	-80.69342365
5,199.99	20.99	193.00	5,184.10	-102.53	-28.51	14,457,106.47	1,726,505.62	39.80838268	-80.69345078
5,299.99	23.99	193.00	5,276.48	-139.80	-37.12	14,457,069.20	1,726,497.02	39.80828042	-80.69348186
5,334.44	25.02	193.00	5,307.83	-153.72	-40.33	14,457,055.28	1,726,493.80	39.80824222	-80.69349349
Begin 25.02° tangent									
5,399.99	25.02	193.00	5,387.23	-180.74	-46.57	14,457,028.27	1,726,487.56	39.80816809	-80.69351604
5,499.99	25.02	193.00	5,457.84	-221.95	-56.09	14,456,887.05	1,726,478.05	39.80805499	-80.69355043
5,599.99	25.02	193.00	5,548.46	-263.17	-65.61	14,456,845.84	1,726,468.53	39.80794190	-80.69358482
5,699.99	25.02	193.00	5,639.07	-304.38	-75.12	14,456,804.63	1,726,459.01	39.80782881	-80.69361921
5,799.99	25.02	193.00	5,729.68	-345.59	-84.64	14,456,863.41	1,726,449.49	39.80771572	-80.69365360
5,899.99	25.02	193.00	5,820.30	-386.81	-94.16	14,456,822.20	1,726,439.98	39.80760262	-80.69368800
5,999.99	25.02	193.00	5,910.91	-428.02	-103.68	14,456,780.99	1,726,430.46	39.80748953	-80.69372239
6,099.99	25.02	193.00	6,001.52	-469.23	-113.19	14,456,739.77	1,726,420.94	39.80737644	-80.69375678
6,199.99	25.02	193.00	6,092.14	-510.45	-122.71	14,456,698.56	1,726,411.42	39.80726334	-80.69379117
6,299.99	25.02	193.00	6,182.75	-551.66	-132.23	14,456,657.35	1,726,401.91	39.80715025	-80.69382556
6,399.99	25.02	193.00	6,273.38	-592.87	-141.75	14,456,616.13	1,726,392.39	39.80703716	-80.69385995
6,499.99	25.02	193.00	6,363.98	-634.09	-151.26	14,456,574.92	1,726,382.87	39.80692407	-80.69389434
6,599.99	25.02	193.00	6,454.59	-675.30	-160.78	14,456,533.71	1,726,373.36	39.80681097	-80.69392873
6,699.99	25.02	193.00	6,545.21	-716.51	-170.30	14,456,492.50	1,726,363.84	39.80669788	-80.69396312
6,799.99	25.02	193.00	6,635.82	-757.73	-179.82	14,456,451.28	1,726,354.32	39.80658479	-80.69399751
6,899.99	25.02	193.00	6,726.43	-798.94	-189.33	14,456,410.06	1,726,344.80	39.80647170	-80.69403190
6,999.99	25.02	193.00	6,817.05	-840.15	-198.85	14,456,368.85	1,726,335.29	39.80635860	-80.69406629
7,099.99	25.02	193.00	6,907.66	-881.37	-208.37	14,456,327.64	1,726,325.77	39.80624551	-80.69410068
7,199.99	25.02	193.00	6,998.27	-922.58	-217.88	14,456,286.42	1,726,316.25	39.80613242	-80.69413507
7,299.99	25.02	193.00	7,088.89	-963.79	-227.40	14,456,245.21	1,726,306.73	39.80601933	-80.69416946
7,399.99	25.02	193.00	7,179.50	-1,005.01	-236.92	14,456,204.00	1,726,297.22	39.80590623	-80.69420385
7,499.99	25.02	193.00	7,270.12	-1,046.22	-246.44	14,456,162.78	1,726,287.70	39.80579314	-80.69423824
7,599.99	25.02	193.00	7,360.73	-1,087.43	-255.95	14,456,121.57	1,726,278.18	39.80568005	-80.69427263
7,699.99	25.02	193.00	7,451.34	-1,128.65	-265.47	14,456,080.36	1,726,268.66	39.80556696	-80.69430702
7,799.99	25.02	193.00	7,541.96	-1,169.86	-274.99	14,456,039.14	1,726,259.15	39.80545386	-80.69434141
7,899.99	25.02	193.00	7,632.57	-1,211.07	-284.51	14,455,997.93	1,726,249.63	39.80534077	-80.69437580
7,999.99	25.02	193.00	7,723.18	-1,252.29	-294.02	14,455,956.72	1,726,240.11	39.80522767	-80.69441019
8,099.99	25.02	193.00	7,813.80	-1,293.50	-303.54	14,455,915.50	1,726,230.59	39.80511458	-80.69444458
8,199.99	25.02	193.00	7,904.41	-1,334.71	-313.06	14,455,874.29	1,726,221.08	39.80500149	-80.69447897
8,299.99	25.02	193.00	7,995.02	-1,375.93	-322.58	14,455,833.08	1,726,211.56	39.80488839	-80.69451335
8,399.99	25.02	193.00	8,085.64	-1,417.14	-332.09	14,455,791.86	1,726,202.04	39.80477530	-80.69454774
8,499.99	25.02	193.00	8,176.25	-1,458.35	-341.61	14,455,750.65	1,726,192.53	39.80466221	-80.69458213
8,599.99	25.02	193.00	8,266.87	-1,499.57	-351.13	14,455,709.44	1,726,183.01	39.80454912	-80.69461652
8,699.99	25.02	193.00	8,357.48	-1,540.78	-360.65	14,455,668.22	1,726,173.49	39.80443602	-80.69465091
8,799.99	25.02	193.00	8,448.09	-1,582.00	-370.16	14,455,627.01	1,726,163.97	39.80432293	-80.69468530
8,899.99	25.02	193.00	8,538.71	-1,623.21	-379.68	14,455,585.80	1,726,154.46	39.80420984	-80.69471969
8,999.99	25.02	193.00	8,629.32	-1,664.42	-389.20	14,455,544.58	1,726,144.94	39.80409674	-80.69475407
9,099.99	25.02	193.00	8,719.93	-1,705.64	-398.71	14,455,503.37	1,726,135.42	39.80398365	-80.69478846
9,199.99	25.02	193.00	8,810.55	-1,746.85	-408.23	14,455,462.16	1,726,125.90	39.80387056	-80.69482285
9,299.99	25.02	193.00	8,901.16	-1,788.06	-417.75	14,455,420.94	1,726,116.39	39.80375746	-80.69485723
9,399.99	25.02	193.00	8,991.77	-1,829.28	-427.27	14,455,379.73	1,726,106.87	39.80364437	-80.69489162
9,499.99	25.02	193.00	9,082.39	-1,870.49	-436.78	14,455,338.52	1,726,097.35	39.80353128	-80.69492601
9,599.99	25.02	193.00	9,173.00	-1,911.70	-446.30	14,455,297.30	1,726,087.83	39.80341818	-80.69496040
9,699.99	25.02	193.00	9,263.62	-1,952.92	-455.82	14,455,256.09	1,726,078.32	39.80330509	-80.69499478
9,799.99	25.02	193.00	9,354.23	-1,994.13	-465.34	14,455,214.88	1,726,068.80	39.80319200	-80.69502917
9,899.99	25.02	193.00	9,444.84	-2,035.34	-474.85	14,455,173.66	1,726,059.28	39.80307891	-80.69506356



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,999.98	25.02	193.00	9,535.46	-2,076.58	-484.37	14,455,132.45	1,725,049.76	39.80296581	-80.69509794	
10,099.98	25.02	193.00	9,626.07	-2,117.77	-493.89	14,455,091.24	1,725,040.25	39.80285272	-80.69513233	
10,199.98	25.02	193.00	9,716.68	-2,158.99	-503.41	14,455,050.02	1,725,030.73	39.80273983	-80.69516872	
10,299.98	25.02	193.00	9,807.30	-2,200.20	-512.92	14,455,008.81	1,725,021.21	39.80262653	-80.69520110	
10,399.98	25.02	193.00	9,897.91	-2,241.41	-522.44	14,454,967.60	1,725,011.69	39.80251344	-80.69523549	
10,499.98	25.02	193.00	9,988.52	-2,282.62	-531.96	14,454,926.38	1,725,002.18	39.80240035	-80.69526988	
10,599.98	25.02	193.00	10,079.14	-2,323.84	-541.48	14,454,885.17	1,725,992.66	39.80228725	-80.69530426	
10,699.98	25.02	193.00	10,169.75	-2,365.05	-550.99	14,454,843.96	1,725,983.14	39.80217416	-80.69533865	
10,799.98	25.02	193.00	10,260.37	-2,406.26	-560.51	14,454,802.74	1,725,973.63	39.80206107	-80.69537303	
10,899.98	25.02	193.00	10,350.98	-2,447.48	-570.03	14,454,761.53	1,725,964.11	39.80194797	-80.69540742	
10,999.98	25.02	193.00	10,441.59	-2,488.69	-579.54	14,454,720.32	1,725,954.59	39.80183488	-80.69544180	
11,099.98	25.02	193.00	10,532.21	-2,529.90	-589.06	14,454,679.10	1,725,945.07	39.80172179	-80.69547619	
11,199.98	25.02	193.00	10,622.82	-2,571.12	-598.58	14,454,637.89	1,725,935.56	39.80160869	-80.69551058	
11,299.98	25.02	193.00	10,713.43	-2,612.33	-608.10	14,454,596.67	1,725,926.04	39.80149560	-80.69554496	
11,399.98	25.02	193.00	10,804.05	-2,653.54	-617.61	14,454,555.46	1,725,916.52	39.80138251	-80.69557935	
11,499.98	25.02	193.00	10,894.66	-2,694.76	-627.13	14,454,514.25	1,725,907.00	39.80126941	-80.69561373	
11,563.36	25.02	193.00	10,952.10	-2,720.88	-633.16	14,454,488.13	1,725,900.97	39.80119773	-80.69563553	
Begin 10°/100' build/turn										
11,599.98	22.81	199.84	10,985.60	-2,735.05	-637.30	14,454,473.95	1,725,896.84	39.80115885	-80.69565041	
11,699.98	18.16	225.89	11,079.50	-2,764.06	-655.06	14,454,444.95	1,725,879.08	39.80107935	-80.69571401	
11,799.98	18.50	258.06	11,174.67	-2,778.22	-681.84	14,454,430.78	1,725,852.30	39.80104070	-80.69580952	
11,899.98	23.41	282.74	11,266.21	-2,777.12	-716.82	14,454,431.88	1,725,817.31	39.80104405	-80.69593406	
11,999.98	30.78	297.75	11,357.28	-2,760.78	-758.94	14,454,448.22	1,725,775.19	39.80108931	-80.69608384	
12,099.98	39.24	307.11	11,439.17	-2,729.71	-806.93	14,454,479.30	1,725,727.21	39.80117510	-80.69625430	
12,199.98	48.21	313.52	11,511.40	-2,684.84	-859.31	14,454,524.17	1,725,674.82	39.80126881	-80.69644028	
12,299.98	57.46	318.33	11,571.77	-2,627.54	-914.51	14,454,581.47	1,725,619.63	39.80145669	-80.69663611	
12,399.98	66.85	322.22	11,618.45	-2,559.55	-970.84	14,454,649.46	1,725,563.30	39.80164394	-80.69683585	
12,499.98	76.32	326.60	11,650.01	-2,482.93	-1,026.59	14,454,726.07	1,725,507.54	39.80185488	-80.69703343	
12,599.98	85.84	328.71	11,665.50	-2,400.02	-1,080.07	14,454,808.99	1,725,454.08	39.80206305	-80.69722284	
12,654.16	91.00	330.36	11,667.00	-2,353.35	-1,107.52	14,454,855.66	1,725,426.61	39.80221148	-80.69732002	
Begin 91.00° lateral										
12,699.97	91.00	330.36	11,666.20	-2,313.54	-1,130.18	14,454,895.47	1,725,403.96	39.80232102	-80.69740020	
12,799.97	91.00	330.36	11,664.46	-2,226.64	-1,179.63	14,454,982.37	1,725,354.51	39.80256013	-80.69757522	
12,899.97	91.00	330.36	11,662.71	-2,139.74	-1,229.08	14,455,069.27	1,725,305.06	39.80279924	-80.69775024	
12,999.97	91.00	330.36	11,660.97	-2,052.84	-1,278.53	14,455,156.17	1,725,255.61	39.80303835	-80.69792526	
13,099.97	91.00	330.36	11,659.23	-1,965.94	-1,327.98	14,455,243.07	1,725,206.16	39.80327746	-80.69810028	
13,199.97	91.00	330.36	11,657.48	-1,879.04	-1,377.43	14,455,329.97	1,725,156.71	39.80351656	-80.69827531	
13,299.97	91.00	330.36	11,655.74	-1,792.13	-1,426.88	14,455,416.87	1,725,107.26	39.80375567	-80.69845033	
13,399.97	91.00	330.36	11,653.99	-1,705.23	-1,476.32	14,455,503.77	1,725,057.81	39.80399478	-80.69862536	
13,499.97	91.00	330.36	11,652.25	-1,618.33	-1,525.77	14,455,590.67	1,725,008.36	39.80423389	-80.69880039	
13,599.97	91.00	330.36	11,650.51	-1,531.43	-1,575.22	14,455,677.57	1,724,958.91	39.80447299	-80.69897542	
13,699.97	91.00	330.36	11,648.76	-1,444.53	-1,624.67	14,455,764.47	1,724,909.46	39.80471210	-80.69915045	
13,799.97	91.00	330.36	11,647.02	-1,357.63	-1,674.12	14,455,851.37	1,724,860.01	39.80495121	-80.69932548	
13,899.97	91.00	330.36	11,645.28	-1,270.73	-1,723.57	14,455,938.27	1,724,810.56	39.80519031	-80.69950051	
13,999.97	91.00	330.36	11,643.53	-1,183.83	-1,773.02	14,456,025.17	1,724,761.11	39.80542942	-80.69967554	
14,099.97	91.00	330.36	11,641.79	-1,096.93	-1,822.47	14,456,112.07	1,724,711.66	39.80566852	-80.69985058	
14,199.97	91.00	330.36	11,640.04	-1,010.03	-1,871.92	14,456,198.97	1,724,662.21	39.80590763	-80.70002561	
14,299.97	91.00	330.36	11,638.30	-923.13	-1,921.37	14,456,285.87	1,724,612.76	39.80614673	-80.70020065	
14,399.97	91.00	330.36	11,636.56	-836.23	-1,970.82	14,456,372.77	1,724,563.31	39.80638584	-80.70037569	
14,499.97	91.00	330.36	11,634.81	-749.33	-2,020.27	14,456,459.67	1,724,513.86	39.80662494	-80.70055073	
14,599.97	91.00	330.36	11,633.07	-662.43	-2,069.72	14,456,546.57	1,724,464.42	39.80686404	-80.70072577	
14,699.97	91.00	330.36	11,631.32	-575.53	-2,119.17	14,456,633.47	1,724,414.97	39.80710315	-80.70090081	
14,799.97	91.00	330.36	11,629.58	-488.63	-2,168.62	14,456,720.37	1,724,365.52	39.80734225	-80.70107585	
14,899.97	91.00	330.36	11,627.84	-401.73	-2,218.07	14,456,807.27	1,724,316.07	39.80758135	-80.70125090	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,999.97	91.00	330.36	11,626.09	-314.63	-2,267.52	14,456,894.17	1,724,266.62	39.80782048	-80.70142594	
15,099.97	91.00	330.36	11,624.35	-227.93	-2,316.97	14,456,981.07	1,724,217.17	39.80805956	-80.70160099	
15,199.97	91.00	330.36	11,622.61	-141.03	-2,366.42	14,457,067.98	1,724,167.72	39.80829866	-80.70177804	
15,299.97	91.00	330.36	11,620.86	-54.13	-2,415.87	14,457,154.88	1,724,118.27	39.80853776	-80.70195109	
15,399.97	91.00	330.36	11,619.12	32.77	-2,465.32	14,457,241.78	1,724,068.82	39.80877687	-80.70212614	
15,499.97	91.00	330.36	11,617.37	119.67	-2,514.77	14,457,328.68	1,724,019.37	39.80901597	-80.70230119	
15,599.97	91.00	330.36	11,615.63	206.57	-2,564.22	14,457,415.58	1,723,969.92	39.80925507	-80.70247624	
15,699.97	91.00	330.36	11,613.89	293.47	-2,613.67	14,457,502.48	1,723,920.47	39.80949417	-80.70265130	
15,799.97	91.00	330.36	11,612.14	380.37	-2,663.12	14,457,589.38	1,723,871.02	39.80973327	-80.70282635	
15,899.97	91.00	330.36	11,610.40	467.27	-2,712.56	14,457,676.28	1,723,821.57	39.80997237	-80.70300141	
15,999.97	91.00	330.36	11,608.65	554.17	-2,762.01	14,457,763.18	1,723,772.12	39.81021147	-80.70317647	
16,099.97	91.00	330.36	11,606.91	641.07	-2,811.46	14,457,850.08	1,723,722.67	39.81045057	-80.70335153	
16,199.97	91.00	330.36	11,605.17	727.97	-2,860.91	14,457,936.98	1,723,673.22	39.81068967	-80.70352659	
16,299.97	91.00	330.36	11,603.42	814.87	-2,910.36	14,458,023.88	1,723,623.77	39.81092877	-80.70370165	
16,399.97	91.00	330.36	11,601.68	901.77	-2,959.81	14,458,110.78	1,723,574.32	39.81116787	-80.70387671	
16,499.97	91.00	330.36	11,599.94	988.67	-3,009.26	14,458,197.68	1,723,524.87	39.81140697	-80.70405177	
16,599.97	91.00	330.36	11,598.19	1,075.57	-3,058.71	14,458,284.58	1,723,475.42	39.81164606	-80.70422684	
16,699.97	91.00	330.36	11,596.45	1,162.47	-3,108.16	14,458,371.48	1,723,425.97	39.81188516	-80.70440191	
16,799.97	91.00	330.36	11,594.70	1,249.37	-3,157.61	14,458,458.38	1,723,376.52	39.81212426	-80.70457697	
16,899.97	91.00	330.36	11,592.96	1,336.27	-3,207.06	14,458,545.28	1,723,327.07	39.81236336	-80.70475204	
16,999.97	91.00	330.36	11,591.22	1,423.17	-3,256.51	14,458,632.18	1,723,277.62	39.81260246	-80.70492711	
17,099.97	91.00	330.36	11,589.47	1,510.08	-3,305.96	14,458,719.08	1,723,228.18	39.81284155	-80.70510218	
17,199.97	91.00	330.36	11,587.73	1,596.98	-3,355.41	14,458,805.98	1,723,178.73	39.81308065	-80.70527726	
17,299.97	91.00	330.36	11,585.99	1,683.88	-3,404.86	14,458,892.88	1,723,129.28	39.81331975	-80.70545233	
17,399.97	91.00	330.36	11,584.24	1,770.78	-3,454.31	14,458,979.78	1,723,079.83	39.81355884	-80.70562740	
17,471.13	91.00	330.36	11,583.00	1,832.62	-3,489.50	14,459,041.62	1,723,044.64	39.81372900	-80.70575200	

PBHL/TD 17471.13 MD/11583.00 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Heaven Hill 3N-10 HU B - plan hits target center - Point	0.00	0.00	11,583.00	1,832.62	-3,489.50	14,459,041.63	1,723,044.63	39.81372900	-80.70575200	
Heaven Hill 3N-10 HU LI - plan misses target center by 43.30usft at 12628.78usft MD (11668.91 TVD, -2375.32 N, -1094.82 E) - Point	0.00	0.00	11,666.00	-2,353.35	-1,057.52	14,454,855.65	1,725,476.61	39.80221100	-80.69714200	
Heaven Hill 3N-10 HU LI - plan hits target center - Point	0.00	0.00	11,667.00	-2,353.35	-1,107.52	14,454,855.65	1,725,426.62	39.80221147	-80.69732001	



Planning Report - Geographic

Database:	DB_Jul2216d_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-10 HU (D)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3N-10 HU (D)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 2"/100' build
1,600.00	1,599.98	1.75	0.00	Begin 2.00° tangent
2,100.00	2,099.68	19.19	0.00	Begin 2"/100' drop
2,200.00	2,199.65	20.94	0.00	Begin vertical hold
4,500.35	4,500.00	20.94	0.00	Begin 3"/100' build
5,334.44	5,307.83	-153.72	-40.33	Begin 25.02° tangent
11,563.36	10,952.10	-2,720.88	-633.16	Begin 10"/100' build/turn
12,654.16	11,657.00	-2,353.35	-1,107.52	Begin 91.00° lateral
17,471.13	11,583.00	1,832.62	-3,489.50	PBHL/TD 17471.13 MD/11563.00 TVD

WW-9
(4/16)

API Number 47 - 051 - 02016
Operator's Well No. Heaven Hill 3N-10HU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle 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 containment

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 965, 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? Berite for weight

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

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

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

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

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

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

Company Official Signature _____

Company Official (Typed Name) Sean Gasser

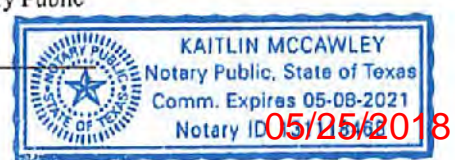
Company Official Title Engineer

RECEIVED
Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection

Subscribed and sworn before me this 14th day of February, 2018

Kaitlin McCawley Kaitlin McCawley Notary Public

My commission expires 5/8/2021



Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 18.43 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Trichsel*

Comments: _____

Title: Oil & Gas Impact

Date: 2/14/18

Field Reviewed? Yes No

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Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection



Well Site Safety Plan
Tug Hill Operating, LLC

JW
2/14/18

Well Name: Heaven Hill 3N-10HU

Pad Location: Heaven Hill Unit 3
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,566.12

EASTING -526,248.66

February 2018

05/25/2018

51-02014

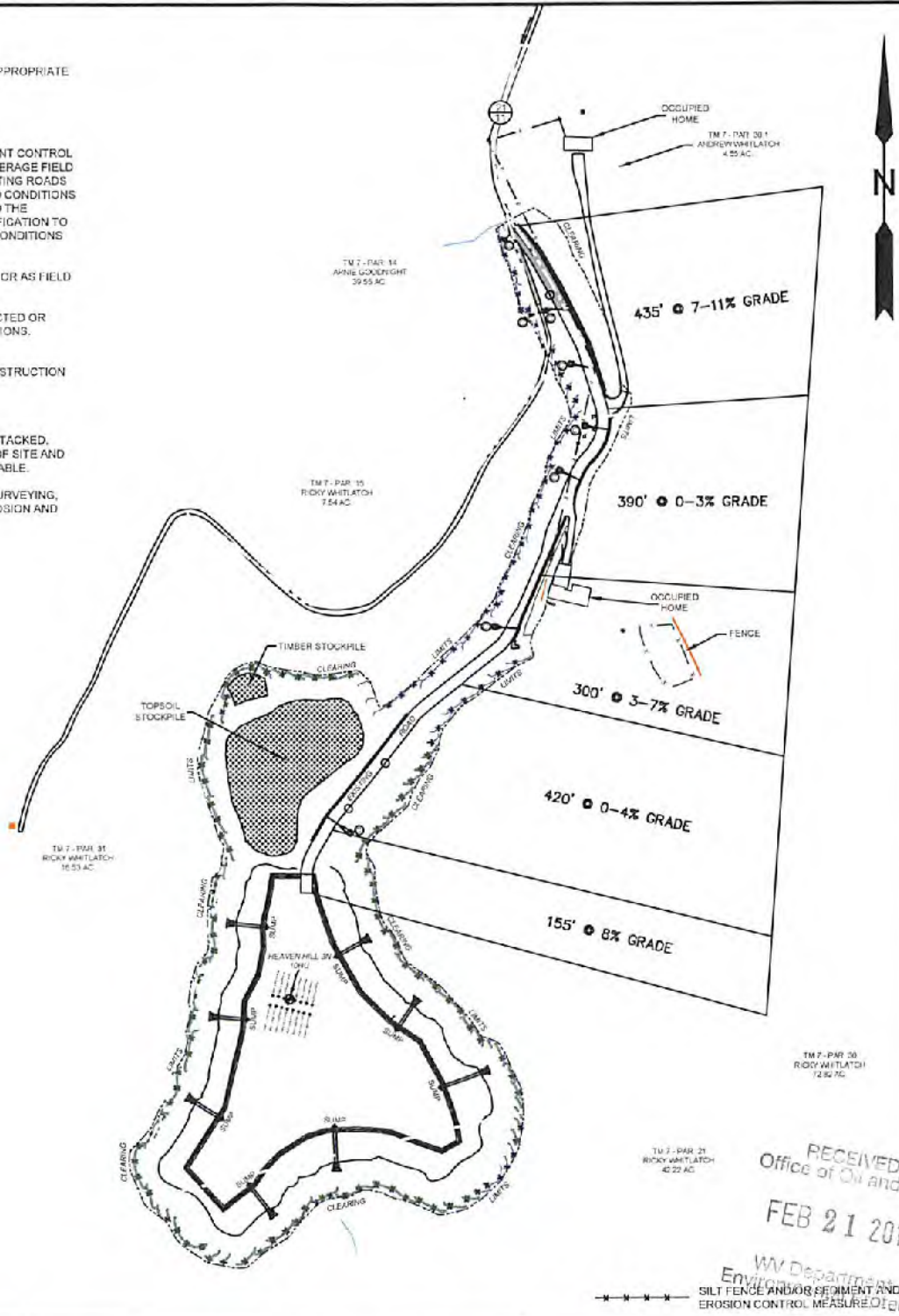
WW-9

PROPOSED HEAVEN HILL 3N - 10HU

SUPPLEMENT PG. 1

NOTES:

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



RECEIVED
Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection
SILT FENCE AND/OR SEDIMENT AND
EROSION CONTROL MEASUREMENT

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 #12 Nashom Drive #101mville, WV 26151 #304) 462-5634
www.slsurvey.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	02/14/2018	NONE

TUG HILL
OPERATING

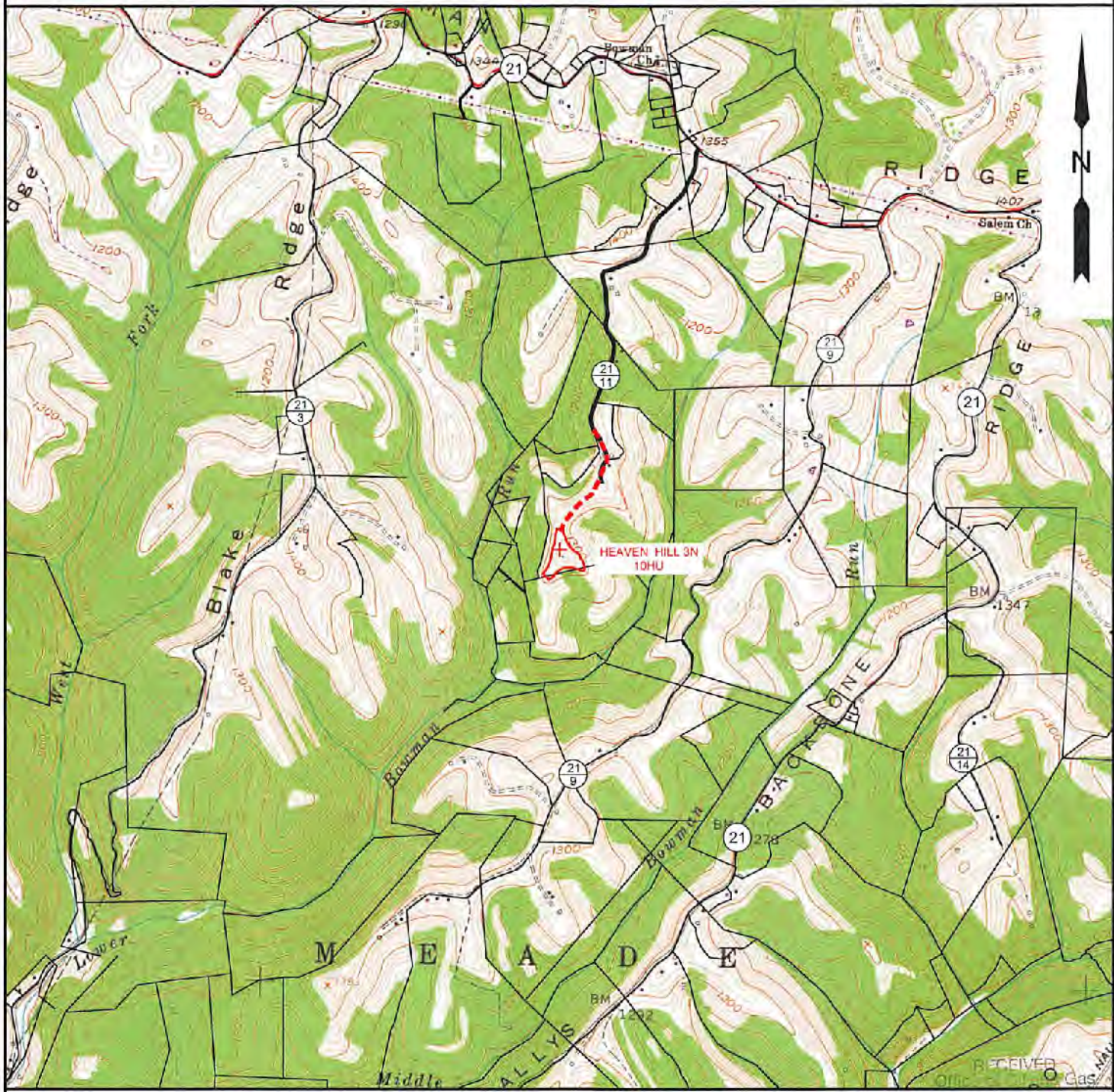
05/25/2018

4705102016

WW-9

PROPOSED HEAVEN HILL 3N - 10HU

SUPPLEMENT PG. 2



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 47°57'55" W AT 50,802' FROM HEAVEN HILL 3N - 10HU SURFACE LOCATION

FEB 21 2018

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5034
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	360 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		02/14/2018	1" = 2000'

WV Department of Environmental Protection
TUG HILL
OPERATING

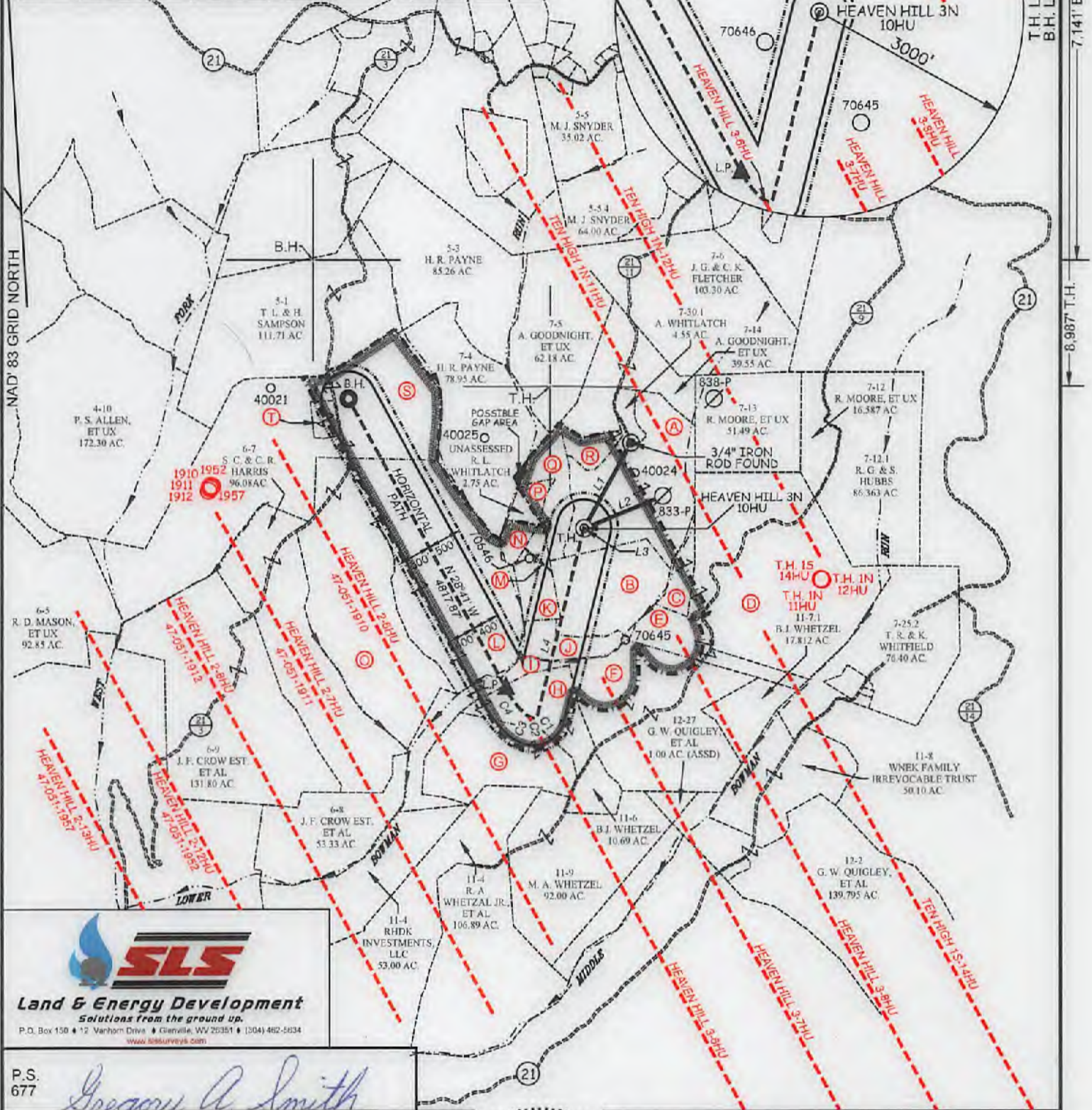
05/25/2018

**HEAVEN HILL 3N LEASE
UTICA UNIT - 368.00 AC ±
WELL 10HU
TUG HILL OPERATING**

LINE	BEARING	DISTANCE
L1	N 28°51' E	1432.41'
L2	N 67°40' E	1251.85'
L3	N 00°58' E	20.95'
L4	S 13°58' W	2814.92'

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

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	64.36'	74.74'	S 34°13' W	62.39'
C2	50.49'	79.34'	S 86°14' W	49.64'
C3	135.53'	313.67'	N 58°33' W	134.48'
C4	451.38'	1439.67'	N 36°45' W	449.53'



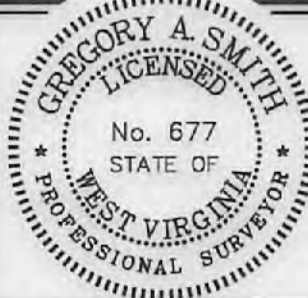
T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"
7,141' B.H.
8,987' T.H.

NAD 83 GRID NORTH

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 462-5034
www.slsurvey.com

P.S. 677
Gregory A. Smith

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD83 S.P.C.(FT)	N. 478,883.22	E. 1,633,264.78	
NAD83 GEO.	LAT-(N) 39.808664	LONG-(W) 80.693346	
NAD83 UTM (M)	N. 4,406,566.12	E. 526,248.66	
LANDING POINT			
NAD83 S.P.C.(FT)	N. 476,547.9	E. 1,632,117.7	
NAD83 GEO.	LAT-(N) 39.802211	LONG-(W) 80.697320	
NAD83 UTM (M)	N. 4,405,848.8	E. 525,911.1	
BOTTOM HOLE			
NAD83 S.P.C.(FT)	N. 480,774.5	E. 1,629,805.2	
NAD83 GEO.	LAT-(N) 39.813729	LONG-(W) 80.705752	
NAD83 UTM (M)	N. 4,407,124.7	E. 525,185.1	



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

LEGEND

UNIT BOUNDARY	
LEASED TRACTS INSIDE UNIT BOUNDARY	
SURFACE LINE	
PROPOSED UTICA	
WELL LATERAL	
400' OFFSET LINE	
500' OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE ADDITIONAL SHEETS)	

SCALE 1" = 2000' FILE NO. 8654P10HUR3.dwg
DATE FEBRUARY 20 20 18
REVISED MARCH 26, APRIL 11, MAY 17 20 18
OPERATORS WELL NO. HEAVEN HILL 3N-10HU
API WELL NO. 47 - 051 - 02016 HGA
STATE COUNTY PERMIT

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

05/25/2018

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

COUNTY NAME PERMIT

10,979' B.H.

7,496' T.H.

**HEAVEN HILL 3N LEASE
UTICA UNIT - 368.00 AC±
WELL 10HU
TUG HILL OPERATING**

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

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

NAD'83 S.P.C.(FT)	N. 478,883.22	E. 1,633,264.78
NAD'83 GEO.	LAT-(N) 39.808664	LONG-(W) 80.693348
NAD'83 UTM (M)	N. 4,406,566.12	E. 526,248.66
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 476,547.9	E. 1,632,117.7
NAD'83 GEO.	LAT-(N) 39.802211	LONG-(W) 80.697320
NAD'83 UTM (M)	N. 4,405,848.8	E. 525,911.1
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 480,774.5	E. 1,629,805.2
NAD'83 GEO.	LAT-(N) 39.813729	LONG-(W) 80.705752
NAD'83 UTM (M)	N. 4,407,124.7	E. 525,185.1

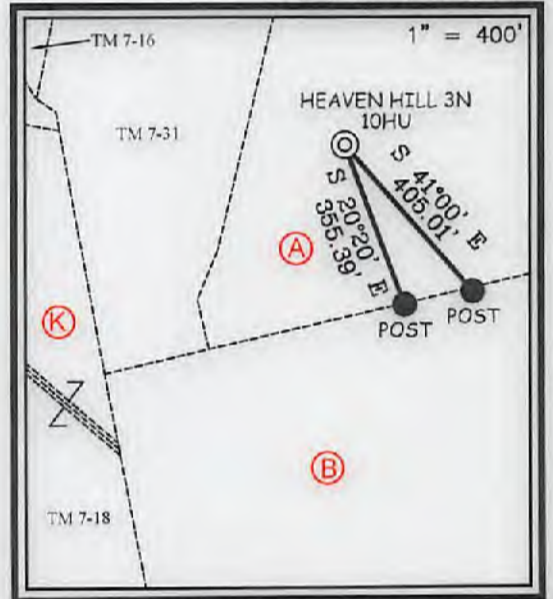
T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°40'00"

B.H.

T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-22	12.00
D	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-24	139.79
E	LARRY J. WHETZEL, ET UX	9-7-23	36.00
F	BRENDA J. WHETZEL	9-11-7	82.858
G	WILLIAM F. & JULIA A. KERNS	9-11-6.2	46.47
H	BRENDA J. WHETZEL	9-11-6.1	30.24
I	KEVIN E. MCGILTON	9-7-19	23.00
J	KEVIN E. MCGILTON	9-7-20	13.39
K	KEVIN E. MCGILTON	9-7-18	14.00
L	CONSOL MINING COMPANY LLC	9-7-2	116.12
M	RICKY L. WHITLATCH	NOT ASSD.	16'X32P
N	KEVIN E. MCGILTON	9-7-17	5.12
O	MICHAEL PINE, ET UX	9-7-1	107.46
P	KEVIN E. MCGILTON	9-7-16	8.00
Q	RICKY L. WHITLATCH	9-7-31	16.53
R	RICKY L. WHITLATCH	9-7-15	7.54
S	CHARLES R. JR. & ANNA MARIE HAGEDORN	9-7-3	203.074
T	CHARLES R. JR. & ANNA MARIE HAGEDORN	9-7-3.1	4.579

REFERENCES



NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF HEAVEN HILL 3-10HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF API'S 47-051-1910, 47-051-1911, 47-051-1912, 47-051-1952, 47-051-1957 AND PROPOSED WELLS HEAVEN HILL 3-6HU, HEAVEN HILL 3-7HU, HEAVEN HILL 3-8HU, TEN HIGH 1S-14HU, TEN HIGH 1N-11HU, AND TEN HIGH 1N-12HU.



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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 FEBRUARY 20, 20 18
REVISED MARCH 26, APRIL 11, MAY 17, 20 18
OPERATORS WELL NO. HEAVEN HILL 3N-10HU
API WELL NO. 47-051-02016 ^{H6A}
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8554P10HUR3.dwg
SCALE 1" = 2000'

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

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

LOCATION: GROUND = 1,336.70' PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±
ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE ADDITIONAL SHEETS ACREAGE 72.82±

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

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH: TVD: 11,583' / TMD: 17,471'

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

COUNTY NAME PERMIT

05/25/2018

WW-6A1
(5/13)

Operator's Well No. Heaven Hill 3N-10HU

**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 spreadsheet

**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: Permit Specialist - Appalachia Region

Lease Name or No	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Bounty	Deed Book/Pg	Assignment	Assignment	Assignment	Assignment	Assignment
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15557	B	9-7-31	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15669	H	9-11-6.1	EMMA ANDERSON	CHEVRON USA INC	1/8+	841 586	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15672	H	9-11-6.1	HAGARD HUPP	CHEVRON USA INC	1/8+	918 304	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15670	H	9-11-6.1	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	841 577	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15671	H	9-11-6.1	JUDALERE K COLLINGS	CHEVRON USA INC	1/8+	841 571	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*47051.256.4	N	9-11-6.1	GLEN A BONAR	TH EXPLORATION LLC	1/8+	831 251	N/A	N/A	N/A	N/A	N/A
10*47051.256.5	N	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	832 330	N/A	N/A	N/A	N/A	N/A
10*47051.256.3	N	9-11-6.1	BERNDA S OYERHOUSE	TH EXPLORATION LLC	1/8+	831 148	N/A	N/A	N/A	N/A	N/A
10*47051.256.1	N	9-11-6.1	BERNDA J WHITTEL	TH EXPLORATION LLC	1/8+	831 145	N/A	N/A	N/A	N/A	N/A
10*47051.256.2	H	9-11-6.1	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A	N/A	N/A
10*15667	I	9-7-19	KEVIN E MCGILTON ET LIX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*18412	J	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A	N/A
10*18413	J	9-7-20	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A	N/A
10*15688	J	9-7-20	ROBERT A EDGE AND SHERRE W EDGE	TH EXPLORATION LLC	1/8+	900 263	N/A	N/A	N/A	N/A	N/A
10*16052	J	9-7-20	KEVIN A DUBEN AND KRISTA A DUBEN	TH EXPLORATION LLC	1/8+	929 212	N/A	N/A	N/A	N/A	N/A
10*15720	J	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A	N/A
10*16020	J	9-7-20	SHARON HIRERMAN MAY B DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A	N/A
10*15721	J	9-7-20	THRA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A	N/A
10*17622	J	9-7-20	DAVID E HIRERMAN JR AN INCARCERATED PER BY B THRU COURT APPTD GUARDIAN AS LITEM DAVID WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A	N/A
10*16053	J	9-7-20	GARY D HIRERMAN AND JUDY ANN HIRERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A	N/A
10*16028	J	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A	N/A
10*16051	J	9-7-20	DONNA JEAN SWIDER AND DAVID SWIDER	TH EXPLORATION LLC	1/8+	905 463	N/A	N/A	N/A	N/A	N/A
10*15667	J	9-7-20	KEVIN E MCGILTON ET LIX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*16289	J	9-7-20	BERNDA HIRERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 459	N/A	N/A	N/A	N/A	N/A
10*16473	L	9-7-2	CHX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	905 355	N/A	N/A	N/A	N/A	N/A
10*15557	M	9-7-Unaddressed Parcel	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15521	S	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TH EXPLORATION LLC	1/8+	858 618	N/A	N/A	N/A	N/A	N/A
10*47051.073.1	S	9-7-3	PATRIOT RESTORATIONS LLC	TH EXPLORATION LLC	1/8+	808 541	N/A	N/A	N/A	N/A	N/A
10*47051.073.2	S	9-7-3	TRIENERGY HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	878 330	N/A	N/A	N/A	N/A	N/A
10*47051.073.3	S	9-7-3	CHARLES R HAGEDORN JR	CHEVRON U.S.A. INC.	1/8+	836 423	N/A	N/A	N/A	N/A	Chevron to Tug H#1: 36/148
10*15608	S	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TRIENERGY HOLDINGS, LLC	1/8+	722 281	N/A	N/A	N/A	TriEnergy to NPAR: 24/195	NPAR to Chevron: 754/332 Chevron to Tug H#1: 36/148

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CAMONSBURG PA 15317-5841

BOOK 960 PAGE 0409

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into this 16th day of February, 2018, between **TUG HILL OPERATING, LLC (THQ)**, a Texas limited liability company, whose address is 1320 S. University Blvd., Suite 500, Fort Worth, TX 76107 and **CHEVRON U.S.A., INC. (Chevron)**, a Pennsylvania corporation, whose address is 700 Cherrington Parkway, Coraopolis, PA 15108.

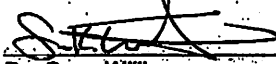
PARTIES AND AGREEMENT REFERENCE: THQ and Chevron entered into a letter agreement ("Letter Agreement") dated February 16th, 2018 (the "Commencement Date") outlining pursuit of definitive agreements to allow THQ the right to permit, drill, extract, produce and market oil and gas from those certain oil and gas interests controlled by Chevron in the Meade District of Marshall County, West Virginia, as more fully described in Exhibit A attached hereto, made a part hereof, and incorporated herein by reference.

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

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

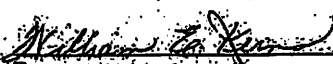
IN WITNESS WHEREOF, the parties have signed their names hereto as of the date first above written.

Tug Hill Operating, LLC



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

Chevron U.S.A., Inc.



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

RECEIVED
Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection

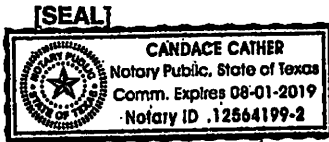
Marshall County
Jan Pest, Clerk
Instrument 1436705
02/16/2018 @ 02:16:57 PM
AGREEMENT
Book 960 @ Page 409
Pages Recorded 2
Recording Cost \$ 11.00

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

STATE OF Texas :

COUNTY OF Tarrant :

Before me, Sean Willis ^{eqc} Cardace Cather, a Notary Public, on this day personally appeared Sean Willis, known to me to be the VP, Engineering & Development Manager, Tug Hill Operating LLC, 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 February, 2018. My Commission expires: 08/01/2019.

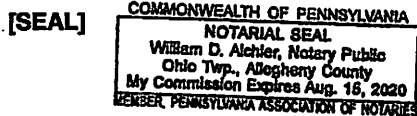


Cardace Cather
Notary Public

STATE OF Pennsylvania :

COUNTY OF Allegheny :

Before me, William D. Alehler, a Notary Public, on this day personally appeared William F. Kerns, known to me to be the Attorney-in-Fact of Chavron 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 February, 2018. My Commission expires: 8-15-2020.



William D. Alehler
Notary Public

RECEIVED
Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 14th day of February, 2018, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 16th day of February, 2018 at 2:10 o'clock P. M.

TESTE: Jan Pest Clerk.



47 05 10 20 16

February 15, 2018

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

RE: Heaven Hill 3N-10HU

Subject: Marshall County Route 21/3 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 in the area reflected on the Heaven Hill 3N-10HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

RECEIVED
Office of Oil and Gas

FEB 21 2018

WV Department of
Environmental Protection

WW-6AC
(1/12)

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

Date of Notice Certification: 04/21/2017

API No. 47- 051 - _____
Operator's Well No. Heaven Hill 3N-10HU
Well Pad Name: Heaven Hill 3

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>526,248.66</u>
County: <u>Marshall</u>	Northing: <u>4,406,566.12</u>
District: <u>Meade</u>	Public Road Access: <u>Yeater Lane (Co. Rt. 21/11)</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Ricky L. Whittatch</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 type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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RECEIVED
Office of Oil and Gas
FEB 21 2018
WV Department of
Environmental Protection

Required Attachments:

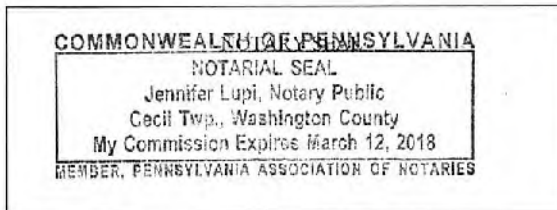
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 15th day of February 2018
Jennifer Lupi Notary Public
 My Commission Expires March 12, 2018

Oil and Gas Privacy Notice:

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

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05/25/2018

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

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

Date of Notice: 2/15/2018 Date Permit Application Filed: 2/15/2018

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
Name: Ricky L. Whittlatch
Address: 1044 Yeater Lane
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: Andrew Whittlatch
Address: 942 Yeater Lane
Glen Easton, WV 26039
Name: Arnie Goodnight, et ux
Address: 102 Goodnight Lane
Moundsville, WV 26041

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

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

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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/air-and-gas/pages/default.aspx.

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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

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(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill 3N-10HU
Well Pad Name: Heaven Hill 3

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

05/25/2018

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill 3N-10HU
Well Pad Name: Heaven Hill 3

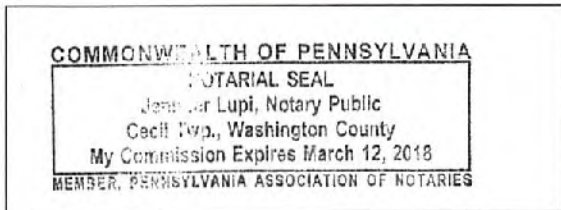
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 15th day of Feb, 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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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: January 19, 2018 **Date of Planned Entry:** January 26, 2018

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Ricky L. Whittlatch
 Address: 1044 Yeater Lane
Glen Easton, WV 26039

Name: Andrew Whittlatch
 Address: 942 Yeater Lane
Glen Easton, WV 26039

Name: Arnie Goodnight ET UX
 Address: 102 Goodnight Lane
Moundsville, WV 26041

COAL OWNER OR LESSEE

Name: Murray Energy Corp.
 Address: 46226 National Road
St. Clairsville, OH 43950

MINERAL OWNER(s)

Name: Ricky L. Whittlatch
 Address: 1044 Yeater Lane
Glen Easton, WV 26039 ****SEE SUPPLEMENT PAGE****

**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: 39.8083194, Long: -80.6931660</u>
County: <u>Marshall</u>	Public Road Access: <u>Yeater Lane (CO. Rt. 21/11)</u>
District: <u>Meade</u>	Watershed: <u>HUC-10 Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Ricky L. Whittlatch</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: 724-0749-8388
 Email: amiller@tug-hill-op.com

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

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Oil and Gas Privacy Notice:

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



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

February 15, 2018

Jill M. Newman
Deputy Commissioner

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

Subject: DOH Permit for the Heaven Hills Unit 3 Pad, Marshall County
Heaven Hills Unit 3-10HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2016-0126 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/11 SLS.

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

Very Truly Yours,

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

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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill 3N-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

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4705/102015



WVDEP OOG
ACCEPTED AS-BUILT
WJL 3/11/2018

Heaven Hill 3 Site
 Site Design, Construction Plan, &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Meade District
 Latitude 39.80832206°
 Longitude -80.69315471°
 Middle Fish Creek Watershed

Permitted Site Information
 Heaven Hill 3 Site
 Permit Number: 20140451928
 Meade District, Marshall County, WV
 Watershed: Middle Fish Creek Watershed
 Tug Hill Contract Number: 1-817-852-1160

Exhibit A: As-Built



Structure Data Information - Approved 04/23/18

Structure	Area (sq ft)	Volume (cu yd)	Notes
Structure 1	1000	100	
Structure 2	2000	200	
Structure 3	3000	300	
Structure 4	4000	400	
Structure 5	5000	500	
Structure 6	6000	600	
Structure 7	7000	700	
Structure 8	8000	800	
Structure 9	9000	900	
Structure 10	10000	1000	

Storm Drain

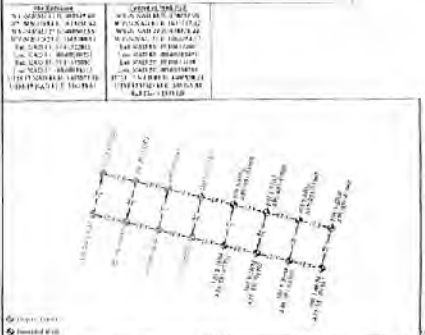
Storm Drain	Length (ft)	Notes
Storm Drain 1	100	
Storm Drain 2	200	
Storm Drain 3	300	
Storm Drain 4	400	
Storm Drain 5	500	
Storm Drain 6	600	
Storm Drain 7	700	
Storm Drain 8	800	
Storm Drain 9	900	
Storm Drain 10	1000	

Structure Area

Structure Area	Area (sq ft)	Notes
Structure Area 1	1000	
Structure Area 2	2000	
Structure Area 3	3000	
Structure Area 4	4000	
Structure Area 5	5000	
Structure Area 6	6000	
Structure Area 7	7000	
Structure Area 8	8000	
Structure Area 9	9000	
Structure Area 10	10000	

Structure Data Information

Structure	Area (sq ft)	Volume (cu yd)	Notes
Structure 1	1000	100	
Structure 2	2000	200	
Structure 3	3000	300	
Structure 4	4000	400	
Structure 5	5000	500	
Structure 6	6000	600	
Structure 7	7000	700	
Structure 8	8000	800	
Structure 9	9000	900	
Structure 10	10000	1000	



Structure Data

Structure	Area (sq ft)	Volume (cu yd)	Notes
Structure 1	1000	100	
Structure 2	2000	200	
Structure 3	3000	300	
Structure 4	4000	400	
Structure 5	5000	500	
Structure 6	6000	600	
Structure 7	7000	700	
Structure 8	8000	800	
Structure 9	9000	900	
Structure 10	10000	1000	



Site Location (NAD 83)

Structure	Latitude (N)	Longitude (W)
Structure 1	39.80832206	-80.69315471
Structure 2	39.80832206	-80.69315471
Structure 3	39.80832206	-80.69315471
Structure 4	39.80832206	-80.69315471
Structure 5	39.80832206	-80.69315471
Structure 6	39.80832206	-80.69315471
Structure 7	39.80832206	-80.69315471
Structure 8	39.80832206	-80.69315471
Structure 9	39.80832206	-80.69315471
Structure 10	39.80832206	-80.69315471



Project Location
 Location: Heaven Hill 3 Site
 Address: 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

Client
 Tug Hill Operating
 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

Design/Construction
 WJL Engineering & Construction
 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

Permitting
 WVDEP OOG
 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

811
 West Virginia
 Call before you dig

AS-BUILT
 This is the as-built plan for the Heaven Hill 3 Site. It shows the location of the structures, roads, and erosion control features. The plan is based on the approved construction plan and field measurements. The plan is to be used for future reference and for the purpose of record.

Notes
 1. All structures shown on this plan were constructed in accordance with the approved construction plan and field measurements.
 2. All roads shown on this plan were constructed in accordance with the approved construction plan and field measurements.
 3. All erosion control features shown on this plan were constructed in accordance with the approved construction plan and field measurements.

Professional Engineer
 WJL Engineering & Construction
 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

Professional Engineer
 WJL Engineering & Construction
 10000 Heaven Hill Road
 Meade District, Marshall County, WV 26041

Structure Data

Structure	Area (sq ft)	Volume (cu yd)	Notes
Structure 1	1000	100	
Structure 2	2000	200	
Structure 3	3000	300	
Structure 4	4000	400	
Structure 5	5000	500	
Structure 6	6000	600	
Structure 7	7000	700	
Structure 8	8000	800	
Structure 9	9000	900	
Structure 10	10000	1000	

TUG HILL OPERATING

THE DOCUMENT PREPARED BY TUG HILL OPERATING

WV DEPARTMENT OF ENVIRONMENTAL PROTECTION

Heaven Hill 3 Site
 Meade District, Marshall County, WV

Scale: 1" = 100'
 Date: 3/11/2018
 Sheet 1 of 1

