



west virginia department of environmental protection

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

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

Friday, March 20, 2020
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for HEAVEN HILL 3N-12HM
47-051-02304-00-00

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-12HM
Farm Name: RICKY L. WHITLATCH
U.S. WELL NUMBER: 47-051-02304-00-00
Horizontal 6A New Drill
Date Issued: 3/20/2020

Promoting a healthy environment.

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.

API Number: _____

PERMIT CONDITIONS

4705102304

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

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

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

2) Operator's Well Number: Heaven Hill 3N-12HM Well Pad Name: Heaven Hill 3

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

4) Elevation, current ground: 1326' Elevation, proposed post-construction: 1326'

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

Other _____

(b) If Gas Shallow x Deep _____

Horizontal X _____

6) Existing Pad: Yes or No Yes

Joe 11/2/19

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6817' - 6869' thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,969'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 14,733'

11) Proposed Horizontal Leg Length: 6,979.04'

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 X No _____

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine

Depth: 1031' TVD and 311' subsea level

Seam: Pittsburgh #8

Owner: Murray Energy / Consolidated Coal Co.

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18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	100'	100'	216FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,130'	1,130'	1077ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,130'	1,130'	1077ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,940'	2,940'	961ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	14,733'	14,733'	3765ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,885'	
Liners							

Jan 11/2/19

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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WW-6B
(10/14)

4705 02304
API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill 3N-12HM
Well Pad Name: Heaven Hill 3

JL
11/2/19

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 17,455,000 lb prop and approximately 269,712 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

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. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

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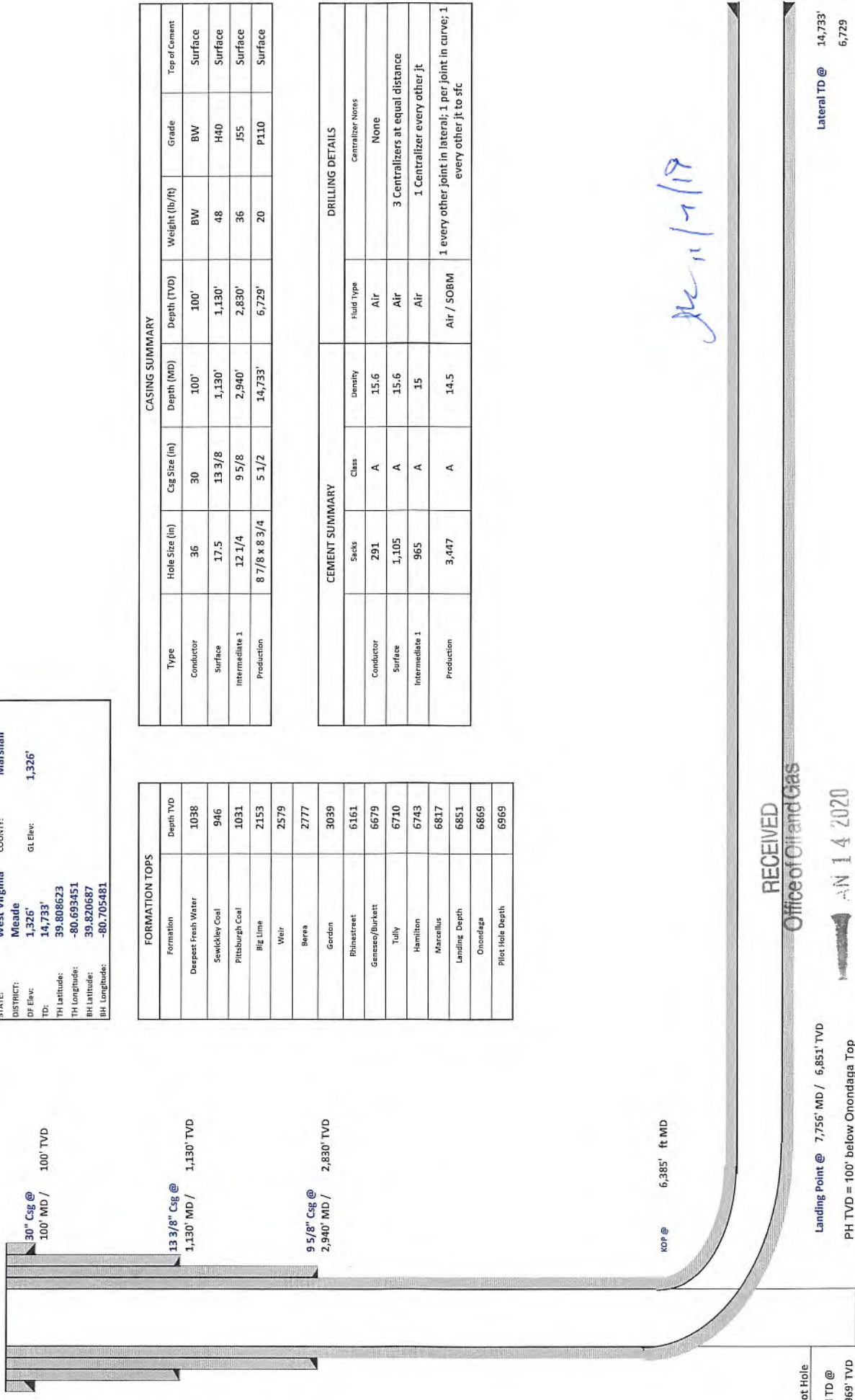
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Environmental Protection

*Note: Attach additional sheets as needed.

47 05 02304



WELL NAME: Heaven Hill 3N-12HM
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DE Elev: 1,326' GI Elev: 1,326'
 TD: 14,733'
 TH Latitude: 39.808623
 TH Longitude: -80.693451
 BH Latitude: 39.820687
 BH Longitude: -80.705481



CASING SUMMARY

Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	100'	100'	BW	BW	Surface
Surface	17.5	13 3/8	1,130'	1,130'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,940'	2,830'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	14,733'	6,729'	20	P110	Surface

CEMENT SUMMARY

Type	Sacks	Class	Density	Fluid Type	DRILLING DETAILS	
					Centralizer Notes	Centralizer Notes
Conductor	291	A	15.6	Air	None	None
Surface	1,105	A	15.6	Air	3 Centralizers at equal distance	
Intermediate 1	965	A	15	Air	1 Centralizer every other jt	
Production	3,447	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc	

FORMATION TOPS

Formation	Depth TVD
Deepest Fresh Water	1038
Sewickley Coal	946
Pittsburgh Coal	1031
Big Lime	2153
Weir	2579
Berea	2777
Gordon	3039
Rhinestreet	6161
Genesee/Burkett	6679
Tully	6710
Hamilton	6743
Marcellus	6817
Landing Depth	6851
Onondaga	6869
Pilot Hole Depth	6969

See 11/17/19

Lateral TD @ 14,733' ft MD
 6,729 ft TVD



Tug Hill Operating, LLC Casing and Cement Program

Heaven Hill 3N-12HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	100'	CTS
Surface	13 3/8"	H40	17 1/2"	1,130'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,940'	CTS
Production	5 1/2"	P110	8 7/8 x 8 3/4"	14,733'	CTS

Cement

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

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

Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19

Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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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 (08/15/2019) 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

Permit well - Heaven Hill 3N-12HM

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	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101947	Tug Hill	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101948	Tug Hill	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101962	Tug Hill	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101963	Tug Hill	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101967	Tug Hill	11,829' TVD	No	No	No, existing Point Pleasant drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101968	Tug Hill	11,829' TVD	No	No	No, existing Point Pleasant drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705101969	Tug Hill	11,829' TVD	No	No	No, existing Point Pleasant drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705102015	Tug Hill	6,876' TVD	No	No	Yes, existing Marcellus drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705102016	Tug Hill	11,898' TVD	No	No	No, existing Point Pleasant drilled well. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Drilled not completed
4705170645	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
4705170646	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
4705140025	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete

Well: County = 51 Permit = 01935

Location Information: [View Map](#)
 API: COUNTY PERMIT TAX DISTRICT QUAD 76 QUAD 15 LAY_CD LON_CD UTMN UTMN
 02041935 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000

Bottom Hole Location Information:
 API: EP FLAG UTMN LON_CD LAY_CD
 02041935 1989 0400000 0400000 0400000

Owner Information:
 API: COMP_OY SUFFIX STATUS SURFACE_OWNER WELL_NUM DO_NUM LEASE LEASE_NUM MINERAL_OWN OPERATOR_AT_COMPLETION PROP_VO PROP_TROY_FM TFM_EST_FR
 02041935 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

Completion Information:
 API: COMP_OY SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FHT INITIAL_CLASS FINAL_CLASS TYPE REG CMP_MTHD TVD TMD NEW_FTG ROD O_BEF O_AFT O_BEF O_AFT NGL_BEF
 02041935 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

Well: County = 51 Permit = 01947

Location Information: [View Map](#)
 API: COUNTY PERMIT TAX DISTRICT QUAD 76 QUAD 15 LAY_CD LON_CD UTMN UTMN
 02041947 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000

Bottom Hole Location Information:
 API: EP FLAG UTMN LON_CD LAY_CD
 02041947 1989 0400000 0400000 0400000

Owner Information:
 API: COMP_OY SUFFIX STATUS SURFACE_OWNER WELL_NUM DO_NUM LEASE LEASE_NUM MINERAL_OWN OPERATOR_AT_COMPLETION PROP_VO PROP_TROY_FM TFM_EST_FR
 02041947 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

Completion Information:
 API: COMP_OY SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FHT INITIAL_CLASS FINAL_CLASS TYPE REG CMP_MTHD TVD TMD NEW_FTG ROD O_BEF O_AFT O_BEF O_AFT NGL_BEF
 02041947 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

Comment: J-1: Flat Missing data

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

Well: County = 51 Permit = 01948

Location Information: [View Map](#)
 API: COUNTY PERMIT TAX DISTRICT QUAD 76 QUAD 15 LAY_CD LON_CD UTMN UTMN
 02041948 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000

Bottom Hole Location Information:
 API: EP FLAG UTMN LON_CD LAY_CD
 02041948 1989 0400000 0400000 0400000

Owner Information:
 API: COMP_OY SUFFIX STATUS SURFACE_OWNER WELL_NUM DO_NUM LEASE LEASE_NUM MINERAL_OWN OPERATOR_AT_COMPLETION PROP_VO PROP_TROY_FM TFM_EST_FR
 02041948 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

Completion Information:
 API: COMP_OY SPUD_DT ELEV DATUM FIELD DEEPEST_FM DEEPEST_FHT INITIAL_CLASS FINAL_CLASS TYPE REG CMP_MTHD TVD TMD NEW_FTG ROD O_BEF O_AFT O_BEF O_AFT NGL_BEF
 02041948 1989 1989 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000 0400000

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01962

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7E	QUAD_1E	LAT_DD	LONG_DD	UTM_E	UTM_N
470510230	Wayne	1962	Wayne	24.00000	24.00000	79.20000	39.20000	1802447	4602814

Bottom Hole Location Information:

API	BP	FLC#	UTM_E	UTM_N	LONG_DD	LAT_DD
470510230

Owner Information:

API	COMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_VO	PROP_TRTY_FM	TRM_EST_FR
470510230

Completion Information:

API	COMP_ID	SPUD_DT	ELEV_GAUM	FIELD	DEEPEST_FM	DEEPEST_FRM	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTRD	TYD	TMD	NEW_PTO	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF
470510230

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01963

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7E	QUAD_1E	LAT_DD	LONG_DD	UTM_E	UTM_N
470510231	Wayne	1963	Wayne	24.00000	24.00000	79.20000	39.20000	1802447	4602814

Bottom Hole Location Information:

API	BP	FLC#	UTM_E	UTM_N	LONG_DD	LAT_DD
470510231

Owner Information:

API	COMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_VO	PROP_TRTY_FM	TRM_EST_FR
470510231

Completion Information:

API	COMP_ID	SPUD_DT	ELEV_GAUM	FIELD	DEEPEST_FM	DEEPEST_FRM	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTRD	TYD	TMD	NEW_PTO	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF
470510231

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01967

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7E	QUAD_1E	LAT_DD	LONG_DD	UTM_E	UTM_N
470510237	Wayne	1967	Wayne	24.00000	24.00000	79.20000	39.20000	1802447	4602814

Bottom Hole Location Information:

API	BP	FLC#	UTM_E	UTM_N	LONG_DD	LAT_DD
470510237

Owner Information:

API	COMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_VO	PROP_TRTY_FM	TRM_EST_FR
470510237

Completion Information:

API	COMP_ID	SPUD_DT	ELEV_GAUM	FIELD	DEEPEST_FM	DEEPEST_FRM	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTRD	TYD	TMD	NEW_PTO	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF
470510237

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01968

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7E	QUAD_1E	LAT_DD	LONG_DD	UTM_E	UTM_N
470510241	Wayne	1968	Wayne	24.00000	24.00000	79.20000	39.20000	1802447	4602814

Bottom Hole Location Information:

API	BP	FLC#	UTM_E	UTM_N	LONG_DD	LAT_DD
470510241

Owner Information:

API	COMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_VO	PROP_TRTY_FM	TRM_EST_FR
470510241

Completion Information:

API	COMP_ID	SPUD_DT	ELEV_GAUM	FIELD	DEEPEST_FM	DEEPEST_FRM	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTRD	TYD	TMD	NEW_PTO	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF
470510241

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 01969

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7E	QUAD_1E	LAT_DD	LONG_DD	UTM_E	UTM_N
470510245	Wayne	1969	Wayne	24.00000	24.00000	79.20000	39.20000	1802447	4602814

Bottom Hole Location Information:

API	BP	FLC#	UTM_E	UTM_N	LONG_DD	LAT_DD
470510245

Owner Information:

API	COMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_VO	PROP_TRTY_FM	TRM_EST_FR
470510245

Completion Information:

API	COMP_ID	SPUD_DT	ELEV_GAUM	FIELD	DEEPEST_FM	DEEPEST_FRM	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTRD	TYD	TMD	NEW_PTO	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NGL_BEF
470510245

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 02016

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTMR	UTM_N
020102016	Wayne	02016	Wayne	04	04	39.95500	-80.93333	42000	4500000

Bottom Hole Location Information:

API	EP	F143	UTMR	LONG_DD	LAT_DD
020102016	1	04	04	39.95500	-80.93333

Owner Information:

API	COMP_ID	SURF	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP_TRST_FM	TYM_EST_FR
020102016

Completion Information:

API	COMP_ID	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTHD	TVD	TMD	NEW_FTS	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NOL	NOL_BEF	
020102016

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 02016

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTMR	UTM_N
020102016	Wayne	02016	Wayne	04	04	39.95500	-80.93333	42000	4500000

Bottom Hole Location Information:

API	EP	F143	UTMR	LONG_DD	LAT_DD
020102016	1	04	04	39.95500	-80.93333

Owner Information:

API	COMP_ID	SURF	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP_TRST_FM	TYM_EST_FR
020102016

Completion Information:

API	COMP_ID	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTHD	TVD	TMD	NEW_FTS	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NOL	NOL_BEF	
020102016

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 70645

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTMR	UTM_N
020170645	Wayne	70645	Wayne	04	04	39.95500	-80.93333	42000	4500000

Bottom Hole Location Information:

There is no Bottom Hole Location data for this well

Owner Information:

API	COMP_ID	SURF	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP_TRST_FM	TYM_EST_FR
020170645

Completion Information:

API	COMP_ID	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTHD	TVD	TMD	NEW_FTS	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NOL	NOL_BEF	
020170645

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 70646

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTMR	UTM_N
020170646	Wayne	70646	Wayne	04	04	39.95500	-80.93333	42000	4500000

Bottom Hole Location Information:

There is no Bottom Hole Location data for this well

Owner Information:

API	COMP_ID	SURF	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VO	PROP_TRST_FM	TYM_EST_FR
020170646

Completion Information:

API	COMP_ID	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FHT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	COMP_MTHD	TVD	TMD	NEW_FTS	RSD	O_BEF	O_AFT	O_BEF	O_AFT	NOL	NOL_BEF	
020170646

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well
 There is no Stratigraphy data for this well
 There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

WV Geological & Economic Survey Well: County = 51 Permit = 40025

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTMR	UTM_N
020140025	Wayne	40025	Wayne	04	04	39.95500	-80.93333	42000	4500000

Bottom Hole Location Information:

There is no Bottom Hole Location data for this well

Owner/Completion data for this well

There is no Pay data for this well
 There is no Production Gas data for this well
 There is no Production Oil data for this well ** some operators may have reported NGL under Oil
 There is no Production NGL data for this well ** some operators may have reported NGL under Oil
 There is no Production Water data for this well

Stratigraphy Information:

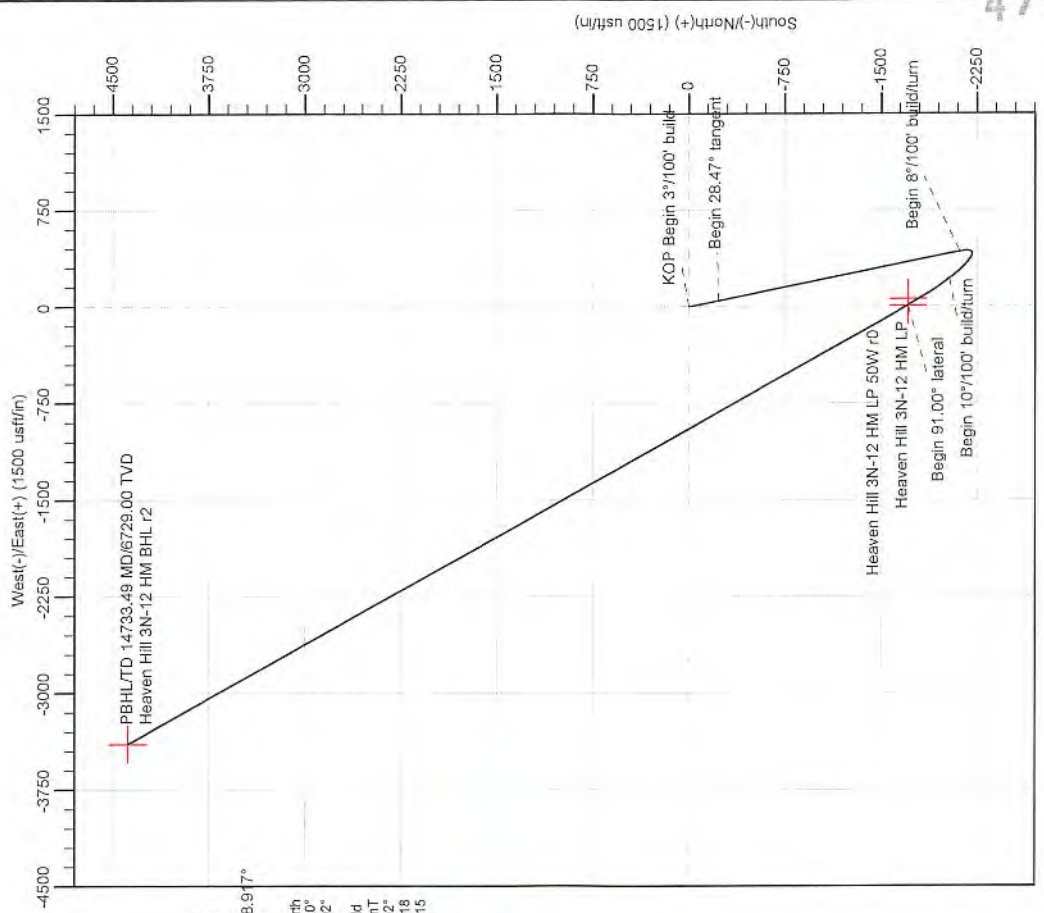
API	SURF	FM	FM_QUALITY	DEPTH_TOP	DEPTH_BOTTOM	THICKNESS	THICKNESS_QUALITY	ELEV DATUM
020140025

There is no Wireline (E-Log) data for this well
 There is no Plugging data for this well
 There is no Sample data for this well

Well: Heaven Hill 3N-12 HM (O)
 Site: Heaven Hill 3
 Project: Marshall County, West Virginia.
 Design: rev2
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 3'/100' build
3	2349.01	28.47	188.64	2310.44	-226.44	45.51	3.00	168.636	-206.90	Begin 28.47° tangent
4	5385.20	28.47	188.64	5856.51	-2112.79	424.64	0.00	0.000	-1930.48	Begin 8'/100' build/turn
5	7338.90	50.00	322.61	6714.61	-2033.31	215.80	8.00	168.759	-1739.78	Begin 10'/100' build/turn
6	7755.74	91.00	330.83	6851.00	-1710.13	8.02	10.00	12.407	-1357.04	Begin 91.00° lateral
7	14733.49	91.00	330.83	6729.00	4381.51	-3392.87	0.00	0.000	5541.59	PBHL/TD 14733.49 MD/6729.00 TVD



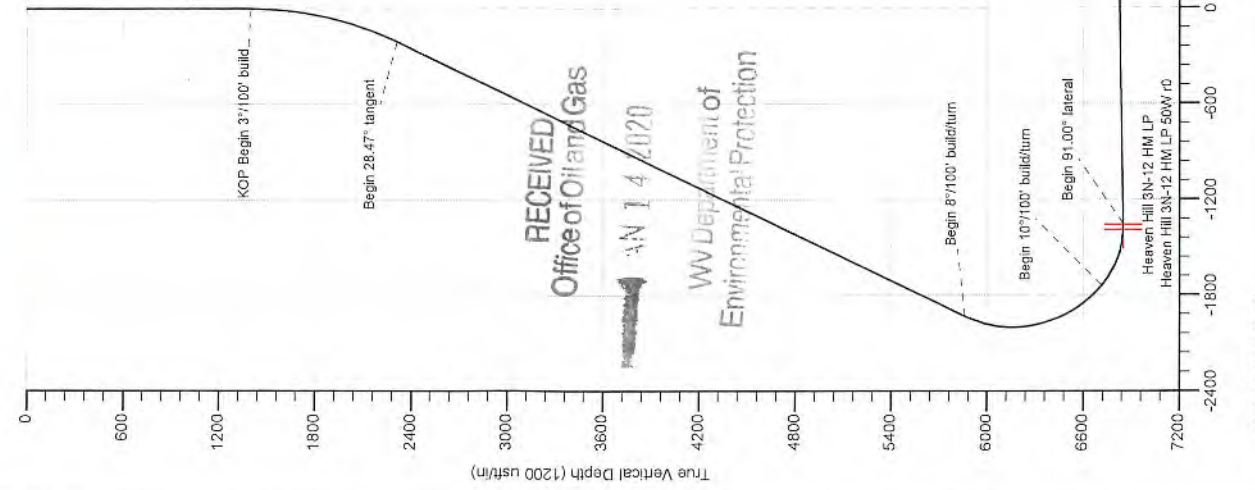
Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)

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

Northing 14457153.97 Easting 1726505.26 Latitude 39.80862300 Longitude -80.69345100

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.97°

Azimuths to Grid North
 True North: -0.20°
 Magnetic North: -8.92°
 Magnetic Field
 Strength: 5210.28mT
 Dip Angle: 66.52°
 Date: 3/8/2018
 Model: IGRF2015



4705-02304



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-12 HM (O)
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-12 HM (O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Heaven Hill 3				
Site Position:		Northing:	14,457,178.77 usft	Latitude:	39.80858060
From:	Lat/Long	Easting:	1,726,571.98 usft	Longitude:	-80.69321360
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.196 °

Well	Heaven Hill 3N-12 HM (O)					
Well Position	+N/-S	0.00 usft	Northing:	14,457,193.98 usft	Latitude:	39.80862300
	+E/-W	0.00 usft	Easting:	1,726,505.26 usft	Longitude:	-80.69345100
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	-8.721	66.918	52,107.75515413

Design	rev2			
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	322.25

Plan Survey Tool Program	Date	10/26/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,733.49 rev2 (Original Hole)	MWD	MWD - Standard

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 Office of Oil and Gas
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 WV Department of Environmental Protection

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	0.000	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,349.01	28.47	168.64	2,310.44	-226.44	45.51	3.00	3.00	0.00	168.636	
6,385.20	28.47	168.64	5,858.51	-2,112.79	424.64	0.00	0.00	0.00	0.000	
7,338.90	50.00	322.61	6,714.61	-2,033.31	215.80	8.00	2.26	16.14	159.759	
7,755.74	91.00	330.83	6,851.00	-1,710.13	8.02	10.00	9.84	-1.97	12.407	
14,733.49	91.00	330.83	6,729.00	4,381.51	-3,392.87	0.00	0.00	0.00	0.000	Heaven Hill 3N-12 HM



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-12 HM (O)
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-12 HM (O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,193.98	1,726,505.26	39.80862300	-80.69345100	
KOP Begin 3°/100' build										
1,500.00	3.00	168.64	1,499.95	-2.57	0.52	14,457,191.41	1,726,505.78	39.80861595	-80.69344920	
1,600.00	6.00	168.64	1,599.63	-10.26	2.06	14,457,183.72	1,726,507.32	39.80859481	-80.69344378	
1,700.00	9.00	168.64	1,698.76	-23.05	4.63	14,457,170.92	1,726,509.89	39.80855965	-80.69343478	
1,800.00	12.00	168.64	1,797.08	-40.92	8.22	14,457,153.06	1,726,513.48	39.80851056	-80.69342222	
1,900.00	15.00	168.64	1,894.30	-63.80	12.82	14,457,130.18	1,726,518.08	39.80844767	-80.69340612	
2,000.00	18.00	168.64	1,990.18	-91.64	18.42	14,457,102.34	1,726,523.68	39.80837116	-80.69338653	
2,100.00	21.00	168.64	2,084.43	-124.36	25.00	14,457,069.61	1,726,530.26	39.80828123	-80.69336351	
2,200.00	24.00	168.64	2,176.81	-161.88	32.53	14,457,032.10	1,726,537.80	39.80817814	-80.69333713	
2,300.00	27.00	168.64	2,267.05	-204.08	41.02	14,456,989.90	1,726,546.28	39.80806216	-80.69330744	
2,349.01	28.47	168.64	2,310.44	-226.44	45.51	14,456,967.53	1,726,550.77	39.80800071	-80.69329171	
Begin 28.47° tangent										
2,400.00	28.47	168.64	2,355.26	-250.27	50.30	14,456,943.71	1,726,555.56	39.80793523	-80.69327494	
2,500.00	28.47	168.64	2,443.16	-297.01	59.69	14,456,896.97	1,726,564.95	39.80780679	-80.69324207	
2,599.99	28.47	168.64	2,531.07	-343.74	69.09	14,456,850.24	1,726,574.35	39.80767835	-80.69320919	
2,699.99	28.47	168.64	2,618.97	-390.48	78.48	14,456,803.50	1,726,583.74	39.80754992	-80.69317632	
2,799.99	28.47	168.64	2,706.88	-437.21	87.87	14,456,756.76	1,726,593.13	39.80742148	-80.69314344	
2,899.99	28.47	168.64	2,794.79	-483.95	97.27	14,456,710.03	1,726,602.53	39.80729305	-80.69311056	
2,999.99	28.47	168.64	2,882.69	-530.68	106.66	14,456,663.29	1,726,611.92	39.80716461	-80.69307769	
3,099.99	28.47	168.64	2,970.60	-577.42	116.05	14,456,616.56	1,726,621.31	39.80703617	-80.69304481	
3,199.99	28.47	168.64	3,058.51	-624.16	125.45	14,456,569.82	1,726,630.71	39.80690774	-80.69301194	
3,299.99	28.47	168.64	3,146.41	-670.89	134.84	14,456,523.09	1,726,640.10	39.80677930	-80.69297906	
3,399.99	28.47	168.64	3,234.32	-717.63	144.23	14,456,476.35	1,726,649.49	39.80665087	-80.69294619	
3,499.99	28.47	168.64	3,322.22	-764.36	153.62	14,456,429.61	1,726,658.89	39.80652243	-80.69291331	
3,599.99	28.47	168.64	3,410.13	-811.10	163.02	14,456,382.88	1,726,668.28	39.80639399	-80.69288044	
3,699.99	28.47	168.64	3,498.04	-857.83	172.41	14,456,336.14	1,726,677.67	39.80626556	-80.69284756	
3,799.99	28.47	168.64	3,585.94	-904.57	181.80	14,456,289.41	1,726,687.07	39.80613712	-80.69281469	
3,899.99	28.47	168.64	3,673.85	-951.30	191.20	14,456,242.67	1,726,696.46	39.80600868	-80.69278181	
3,999.99	28.47	168.64	3,761.76	-998.04	200.59	14,456,195.94	1,726,705.85	39.80588025	-80.69274894	
4,099.99	28.47	168.64	3,849.66	-1,044.78	209.98	14,456,149.20	1,726,715.24	39.80575181	-80.69271606	
4,199.99	28.47	168.64	3,937.57	-1,091.51	219.38	14,456,102.46	1,726,724.64	39.80562338	-80.69268319	
4,299.99	28.47	168.64	4,025.47	-1,138.25	228.77	14,456,055.73	1,726,734.03	39.80549494	-80.69265031	
4,399.99	28.47	168.64	4,113.38	-1,184.98	238.16	14,456,009.00	1,726,743.42	39.80536650	-80.69261744	
4,499.99	28.47	168.64	4,201.29	-1,231.72	247.56	14,455,962.26	1,726,752.82	39.80523807	-80.69258457	
4,599.99	28.47	168.64	4,289.19	-1,278.45	256.95	14,455,915.52	1,726,762.21	39.80510963	-80.69255169	
4,699.99	28.47	168.64	4,377.10	-1,325.19	266.34	14,455,868.79	1,726,771.60	39.80498119	-80.69251882	
4,799.99	28.47	168.64	4,465.01	-1,371.93	275.74	14,455,822.05	1,726,781.00	39.80485276	-80.69248595	
4,899.99	28.47	168.64	4,552.91	-1,418.66	285.13	14,455,775.32	1,726,790.39	39.80472432	-80.69245307	
4,999.99	28.47	168.64	4,640.82	-1,465.40	294.52	14,455,728.58	1,726,799.78	39.80459589	-80.69242020	



Planning Report - Geographic

4705 02374

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-12 HM (O)
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-12 HM (O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,099.99	28.47	168.64	4,728.72	-1,512.13	303.91	14,455,681.84	1,726,809.18	39.80446745	-80.69238733	
5,199.99	28.47	168.64	4,816.63	-1,558.87	313.31	14,455,635.11	1,726,818.57	39.80433901	-80.69235445	
5,299.99	28.47	168.64	4,904.54	-1,605.60	322.70	14,455,588.37	1,726,827.96	39.80421058	-80.69232158	
5,399.99	28.47	168.64	4,992.44	-1,652.34	332.09	14,455,541.64	1,726,837.36	39.80408214	-80.69228871	
5,499.99	28.47	168.64	5,080.35	-1,699.08	341.49	14,455,494.90	1,726,846.75	39.80395370	-80.69225583	
5,599.99	28.47	168.64	5,168.26	-1,745.81	350.88	14,455,448.17	1,726,856.14	39.80382527	-80.69222296	
5,699.99	28.47	168.64	5,256.16	-1,792.55	360.27	14,455,401.43	1,726,865.53	39.80369683	-80.69219009	
5,799.99	28.47	168.64	5,344.07	-1,839.28	369.67	14,455,354.69	1,726,874.93	39.80356840	-80.69215722	
5,899.99	28.47	168.64	5,431.97	-1,886.02	379.06	14,455,307.96	1,726,884.32	39.80343996	-80.69212434	
5,999.99	28.47	168.64	5,519.88	-1,932.75	388.45	14,455,261.22	1,726,893.71	39.80331152	-80.69209147	
6,099.99	28.47	168.64	5,607.79	-1,979.49	397.85	14,455,214.49	1,726,903.11	39.80318309	-80.69205860	
6,199.99	28.47	168.64	5,695.69	-2,026.22	407.24	14,455,167.75	1,726,912.50	39.80305465	-80.69202573	
6,299.99	28.47	168.64	5,783.60	-2,072.96	416.63	14,455,121.02	1,726,921.89	39.80292621	-80.69199286	
6,385.20	28.47	168.64	5,858.51	-2,112.79	424.64	14,455,081.19	1,726,929.90	39.80281677	-80.69196484	
Begin 8°/100' build/turn										
6,399.99	27.36	169.53	5,871.57	-2,119.58	425.95	14,455,074.39	1,726,931.21	39.80279809	-80.69196026	
6,499.99	20.09	177.89	5,963.09	-2,159.41	430.77	14,455,034.57	1,726,936.03	39.80268868	-80.69194359	
6,599.99	13.60	194.40	6,058.80	-2,188.00	428.47	14,455,005.98	1,726,933.73	39.80261017	-80.69195211	
6,699.99	9.66	229.98	6,156.85	-2,204.81	419.11	14,454,989.17	1,726,924.37	39.80256410	-80.69198565	
6,799.99	11.33	274.12	6,255.32	-2,209.51	402.86	14,454,984.47	1,726,908.12	39.80255136	-80.69204356	
6,899.99	17.04	297.61	6,352.31	-2,202.00	380.04	14,454,991.98	1,726,885.30	39.80257219	-80.69212471	
6,999.99	24.06	308.69	6,445.92	-2,182.43	351.10	14,455,011.54	1,726,856.36	39.80262620	-80.69222753	
7,099.99	31.54	314.86	6,534.33	-2,151.19	316.59	14,455,042.79	1,726,821.85	39.80271232	-80.69235001	
7,199.99	39.20	318.85	6,615.83	-2,108.88	277.19	14,455,085.10	1,726,782.45	39.80282890	-80.69248977	
7,299.99	46.96	321.69	6,688.82	-2,056.32	233.67	14,455,137.66	1,726,738.93	39.80297364	-80.69264409	
7,338.90	50.00	322.61	6,714.61	-2,033.31	215.80	14,455,160.67	1,726,721.06	39.80303700	-80.69270744	
Begin 10°/100' build/turn										
7,399.99	55.98	324.19	6,751.37	-1,994.16	186.75	14,455,199.82	1,726,692.02	39.80314480	-80.69281038	
7,499.99	65.80	326.36	6,799.96	-1,922.40	137.12	14,455,271.58	1,726,642.38	39.80334233	-80.69298624	
7,599.98	75.64	328.21	6,832.94	-1,843.06	86.20	14,455,350.92	1,726,591.47	39.80356069	-80.69316654	
7,699.98	85.50	329.91	6,849.30	-1,758.55	35.57	14,455,435.43	1,726,540.83	39.80379327	-80.69334581	
7,755.74	91.00	330.83	6,851.00	-1,710.12	8.02	14,455,483.85	1,726,513.28	39.80392650	-80.69344329	
Begin 91.00° lateral										
7,799.98	91.00	330.83	6,850.23	-1,671.50	-13.54	14,455,522.48	1,726,491.72	39.80403278	-80.69351961	
7,899.98	91.00	330.83	6,848.48	-1,584.20	-62.28	14,455,609.78	1,726,442.98	39.80427299	-80.69369208	
7,999.98	91.00	330.83	6,846.73	-1,496.90	-111.02	14,455,697.08	1,726,394.24	39.80451320	-80.69386456	
8,099.98	91.00	330.83	6,844.99	-1,409.60	-159.76	14,455,784.38	1,726,345.50	39.80475341	-80.69403703	
8,199.98	91.00	330.83	6,843.24	-1,322.30	-208.50	14,455,871.68	1,726,296.76	39.80499361	-80.69420951	
8,299.98	91.00	330.83	6,841.49	-1,234.99	-257.24	14,455,958.98	1,726,248.02	39.80523382	-80.69438199	
8,399.98	91.00	330.83	6,839.74	-1,147.69	-305.98	14,456,046.28	1,726,199.28	39.80547403	-80.69455447	
8,499.98	91.00	330.83	6,837.99	-1,060.39	-354.72	14,456,133.58	1,726,150.55	39.80571423	-80.69472695	
8,599.98	91.00	330.83	6,836.24	-973.09	-403.45	14,456,220.88	1,726,101.81	39.80595444	-80.69489944	
8,699.98	91.00	330.83	6,834.49	-885.79	-452.19	14,456,308.18	1,726,053.07	39.80619464	-80.69507192	
8,799.98	91.00	330.83	6,832.75	-798.49	-500.93	14,456,395.49	1,726,004.33	39.80643485	-80.69524441	
8,899.98	91.00	330.83	6,831.00	-711.19	-549.67	14,456,482.79	1,725,955.59	39.80667505	-80.69541689	
8,999.98	91.00	330.83	6,829.25	-623.89	-598.41	14,456,570.09	1,725,906.85	39.80691526	-80.69558938	
9,099.98	91.00	330.83	6,827.50	-536.59	-647.15	14,456,657.39	1,725,858.11	39.80715546	-80.69576187	
9,199.98	91.00	330.83	6,825.75	-449.29	-695.89	14,456,744.69	1,725,809.37	39.80739567	-80.69593436	
9,299.98	91.00	330.83	6,824.00	-361.99	-744.63	14,456,831.99	1,725,760.63	39.80763587	-80.69610685	
9,399.98	91.00	330.83	6,822.26	-274.69	-793.37	14,456,919.29	1,725,711.90	39.80787607	-80.69627934	
9,499.98	91.00	330.83	6,820.51	-187.39	-842.10	14,457,006.59	1,725,663.16	39.80811628	-80.69645184	
9,599.98	91.00	330.83	6,818.76	-100.09	-890.84	14,457,093.89	1,725,614.42	39.80835648	-80.69662433	
9,699.98	91.00	330.83	6,817.01	-12.78	-939.58	14,457,181.19	1,725,565.68	39.80859668	-80.69679683	
9,799.98	91.00	330.83	6,815.26	74.52	-988.32	14,457,268.49	1,725,516.94	39.80883689	-80.69696932	



Planning Report - Geographic

4705 02304

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-12 HM (O)
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-12 HM (O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,899.98	91.00	330.83	6,813.51	161.82	-1,037.06	14,457,355.79	1,725,468.20	39.80907709	-80.69714182	
9,999.98	91.00	330.83	6,811.76	249.12	-1,085.80	14,457,443.09	1,725,419.46	39.80931729	-80.69731432	
10,099.98	91.00	330.83	6,810.02	336.42	-1,134.54	14,457,530.40	1,725,370.72	39.80955749	-80.69748682	
10,199.98	91.00	330.83	6,808.27	423.72	-1,183.28	14,457,617.70	1,725,321.98	39.80979769	-80.69765933	
10,299.98	91.00	330.83	6,806.52	511.02	-1,232.02	14,457,705.00	1,725,273.24	39.81003789	-80.69783183	
10,399.98	91.00	330.83	6,804.77	598.32	-1,280.76	14,457,792.30	1,725,224.51	39.81027810	-80.69800433	
10,499.98	91.00	330.83	6,803.02	685.62	-1,329.49	14,457,879.60	1,725,175.77	39.81051830	-80.69817684	
10,599.98	91.00	330.83	6,801.27	772.92	-1,378.23	14,457,966.90	1,725,127.03	39.81075850	-80.69834935	
10,699.98	91.00	330.83	6,799.53	860.22	-1,426.97	14,458,054.20	1,725,078.29	39.81099870	-80.69852185	
10,799.98	91.00	330.83	6,797.78	947.52	-1,475.71	14,458,141.50	1,725,029.55	39.81123890	-80.69869436	
10,899.98	91.00	330.83	6,796.03	1,034.82	-1,524.45	14,458,228.80	1,724,980.81	39.81147910	-80.69886687	
10,999.98	91.00	330.83	6,794.28	1,122.13	-1,573.19	14,458,316.10	1,724,932.07	39.81171930	-80.69903939	
11,099.98	91.00	330.83	6,792.53	1,209.43	-1,621.93	14,458,403.40	1,724,883.33	39.81195950	-80.69921190	
11,199.98	91.00	330.83	6,790.78	1,296.73	-1,670.67	14,458,490.70	1,724,834.59	39.81219970	-80.69938441	
11,299.98	91.00	330.83	6,789.03	1,384.03	-1,719.41	14,458,578.00	1,724,785.86	39.81243989	-80.69955693	
11,399.98	91.00	330.83	6,787.29	1,471.33	-1,768.14	14,458,665.30	1,724,737.12	39.81268009	-80.69972945	
11,499.98	91.00	330.83	6,785.54	1,558.63	-1,816.88	14,458,752.61	1,724,688.38	39.81292029	-80.69990196	
11,599.98	91.00	330.83	6,783.79	1,645.93	-1,865.62	14,458,839.91	1,724,639.64	39.81316049	-80.70007448	
11,699.98	91.00	330.83	6,782.04	1,733.23	-1,914.36	14,458,927.21	1,724,590.90	39.81340069	-80.70024700	
11,799.98	91.00	330.83	6,780.29	1,820.53	-1,963.10	14,459,014.51	1,724,542.16	39.81364088	-80.70041952	
11,899.98	91.00	330.83	6,778.54	1,907.83	-2,011.84	14,459,101.81	1,724,493.42	39.81388108	-80.70059205	
11,999.98	91.00	330.83	6,776.80	1,995.13	-2,060.58	14,459,189.11	1,724,444.68	39.81412128	-80.70076457	
12,099.98	91.00	330.83	6,775.05	2,082.43	-2,109.32	14,459,276.41	1,724,395.94	39.81436147	-80.70093709	
12,199.98	91.00	330.83	6,773.30	2,169.73	-2,158.06	14,459,363.71	1,724,347.20	39.81460167	-80.70110962	
12,299.98	91.00	330.83	6,771.55	2,257.03	-2,206.80	14,459,451.01	1,724,298.47	39.81484187	-80.70128215	
12,399.98	91.00	330.83	6,769.80	2,344.34	-2,255.53	14,459,538.31	1,724,249.73	39.81508206	-80.70145468	
12,499.98	91.00	330.83	6,768.05	2,431.64	-2,304.27	14,459,625.61	1,724,200.99	39.81532226	-80.70162721	
12,599.98	91.00	330.83	6,766.30	2,518.94	-2,353.01	14,459,712.91	1,724,152.25	39.81556245	-80.70179974	
12,699.97	91.00	330.83	6,764.56	2,606.24	-2,401.75	14,459,800.21	1,724,103.51	39.81580265	-80.70197227	
12,799.97	91.00	330.83	6,762.81	2,693.54	-2,450.49	14,459,887.52	1,724,054.77	39.81604284	-80.70214480	
12,899.97	91.00	330.83	6,761.06	2,780.84	-2,499.23	14,459,974.82	1,724,006.03	39.81628304	-80.70231734	
12,999.97	91.00	330.83	6,759.31	2,868.14	-2,547.97	14,460,062.12	1,723,957.29	39.81652323	-80.70248987	
13,099.97	91.00	330.83	6,757.56	2,955.44	-2,596.71	14,460,149.42	1,723,908.55	39.81676343	-80.70266241	
13,199.97	91.00	330.83	6,755.81	3,042.74	-2,645.45	14,460,236.72	1,723,859.82	39.81700362	-80.70283495	
13,299.97	91.00	330.83	6,754.06	3,130.04	-2,694.18	14,460,324.02	1,723,811.08	39.81724381	-80.70300749	
13,399.97	91.00	330.83	6,752.32	3,217.34	-2,742.92	14,460,411.32	1,723,762.34	39.81748401	-80.70318003	
13,499.97	91.00	330.83	6,750.57	3,304.64	-2,791.66	14,460,498.62	1,723,713.60	39.81772420	-80.70335257	
13,599.97	91.00	330.83	6,748.82	3,391.94	-2,840.40	14,460,585.92	1,723,664.86	39.81796439	-80.70352511	
13,699.97	91.00	330.83	6,747.07	3,479.24	-2,889.14	14,460,673.22	1,723,616.12	39.81820458	-80.70369766	
13,799.97	91.00	330.83	6,745.32	3,566.55	-2,937.88	14,460,760.52	1,723,567.38	39.81844478	-80.70387020	
13,899.97	91.00	330.83	6,743.57	3,653.85	-2,986.62	14,460,847.82	1,723,518.64	39.81868497	-80.70404275	
13,999.97	91.00	330.83	6,741.83	3,741.15	-3,035.36	14,460,935.12	1,723,469.90	39.81892516	-80.70421529	
14,099.97	91.00	330.83	6,740.08	3,828.45	-3,084.10	14,461,022.42	1,723,421.16	39.81916535	-80.70438784	
14,199.97	91.00	330.83	6,738.33	3,915.75	-3,132.84	14,461,109.73	1,723,372.43	39.81940554	-80.70456039	
14,299.97	91.00	330.83	6,736.58	4,003.05	-3,181.57	14,461,197.03	1,723,323.69	39.81964573	-80.70473294	
14,399.97	91.00	330.83	6,734.83	4,090.35	-3,230.31	14,461,284.33	1,723,274.95	39.81988592	-80.70490550	
14,499.97	91.00	330.83	6,733.08	4,177.65	-3,279.05	14,461,371.63	1,723,226.21	39.82012611	-80.70507805	
14,599.97	91.00	330.83	6,731.33	4,264.95	-3,327.79	14,461,458.93	1,723,177.47	39.82036630	-80.70525061	
14,699.97	91.00	330.83	6,729.59	4,352.25	-3,376.53	14,461,546.23	1,723,128.73	39.82060649	-80.70542316	
14,733.49	91.00	330.83	6,729.00	4,381.51	-3,392.87	14,461,575.49	1,723,112.39	39.82068700	-80.70548100	

PBHL/TD 14733.49 MD/6729.00 TVD



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Heaven Hill 3N-12 HM (O)
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-12 HM (O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Heaven Hill 3N-12 HM B - plan hits target center - Point	0.00	0.00	6,729.00	4,381.51	-3,392.87	14,461,575.49	1,723,112.39	39.82068700	-80.70548100
Heaven Hill 3N-12 HM L - plan misses target center by 0.06usft at 7755.69usft MD (6851.01 TVD, -1710.17 N, 8.05 E) - Point	0.00	0.00	6,851.00	-1,710.14	8.10	14,455,483.84	1,726,513.36	39.80392647	-80.69344302
Heaven Hill 3N-12 HM L - plan misses target center by 43.63usft at 7730.97usft MD (6850.91 TVD, -1731.70 N, 20.17 E) - Point	0.00	0.01	6,851.00	-1,710.14	58.10	14,455,483.84	1,726,563.36	39.80392600	-80.69326500

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,400.00	1,400.00	0.00	0.00	KOP Begin 3°/100' build
2,349.01	2,310.44	-226.44	45.51	Begin 28.47° tangent
6,385.20	5,858.51	-2,112.79	424.64	Begin 8°/100' build/turn
7,338.90	6,714.61	-2,033.31	215.80	Begin 10°/100' build/turn
7,755.74	6,851.00	-1,710.12	8.02	Begin 91.00° lateral
14,733.49	6,729.00	4,381.51	-3,392.87	PBHL/TD 14733.49 MD/6729.00 TVD

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JAN 14 2020

WV Department of
Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Heaven Hill 3N-12HM

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 contain⁺

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? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

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

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

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

Company Official Signature Jim Pancake
Company Official (Typed Name) Jim Pancake
Company Official Title Vice President, Geoscience

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Office of Oil and Gas
JAN 14 2020
WV Department of
Environmental Protection

Subscribed and sworn before me this 9 day of OCTOBER, 20 19

Maureen A Stead Notary Public
My commission expires 1/28/23

Commonwealth of Pennsylvania - Notary Seal
MAUREEN A STEAD - Notary Public
Washington County
My Commission Expires Jan 28, 2023
Commission Number 1259926

Form WW-9

Operator's Well No. Heaven Hill 3N-12HM

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 Unholzer

Comments: _____

Title: Oil & Gas Inspector

Date: 9/12/18

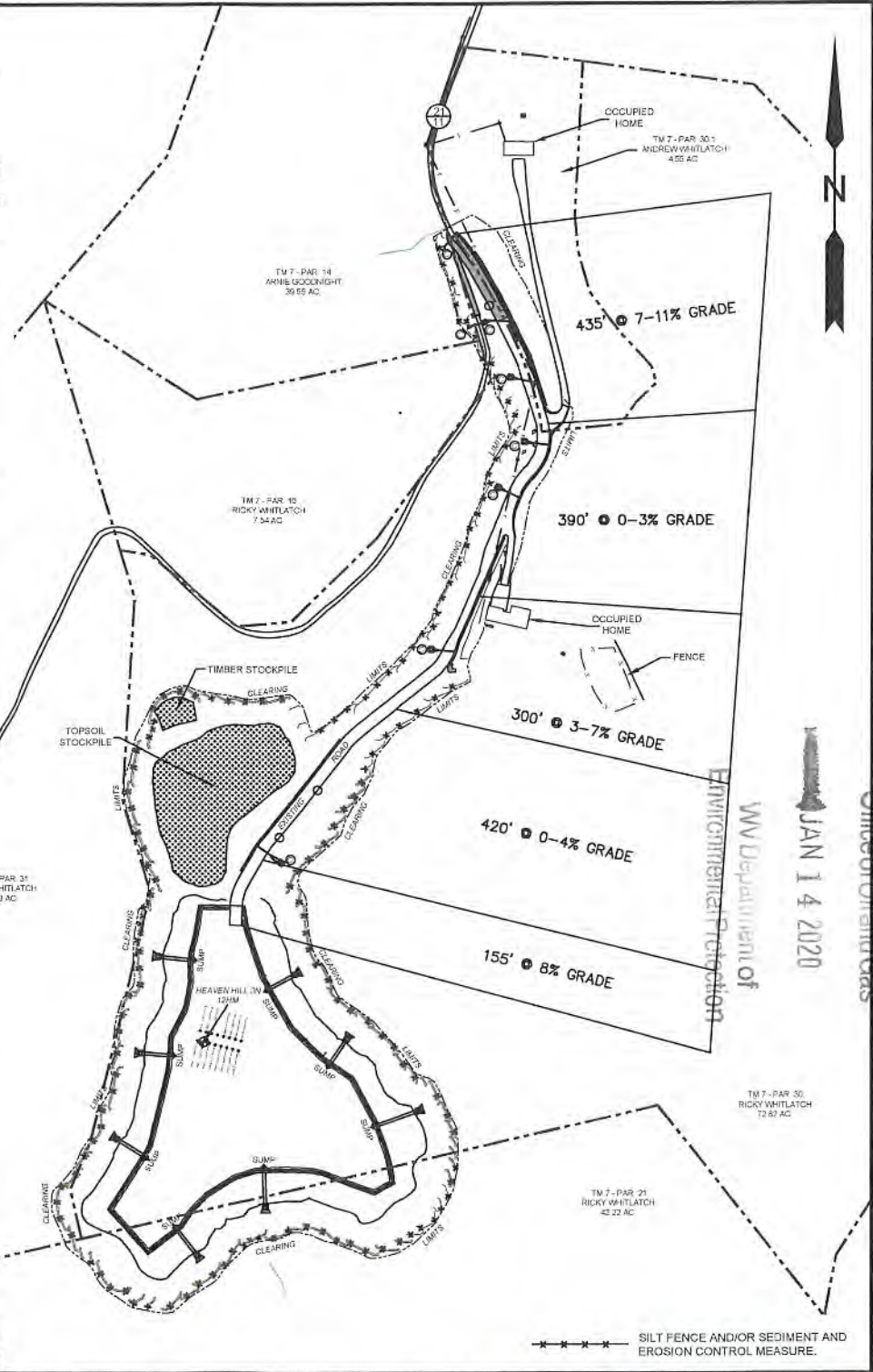
Field Reviewed? () Yes () No

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WV Department of
Environmental Protection

PROPOSED HEAVEN HILL 3N - 12HM

NOTES:

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



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 WV Department of

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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	06/21/2019	NONE

TUG HILL
OPERATING



Well Site Safety Plan

Tug Hill Operating, LLC

9/12/19

Well Name: Heaven Hill 3N-12HM

Pad Location: Heaven Hill 3

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:
Northing - 4,406,561.54
Easting - 526,239.86

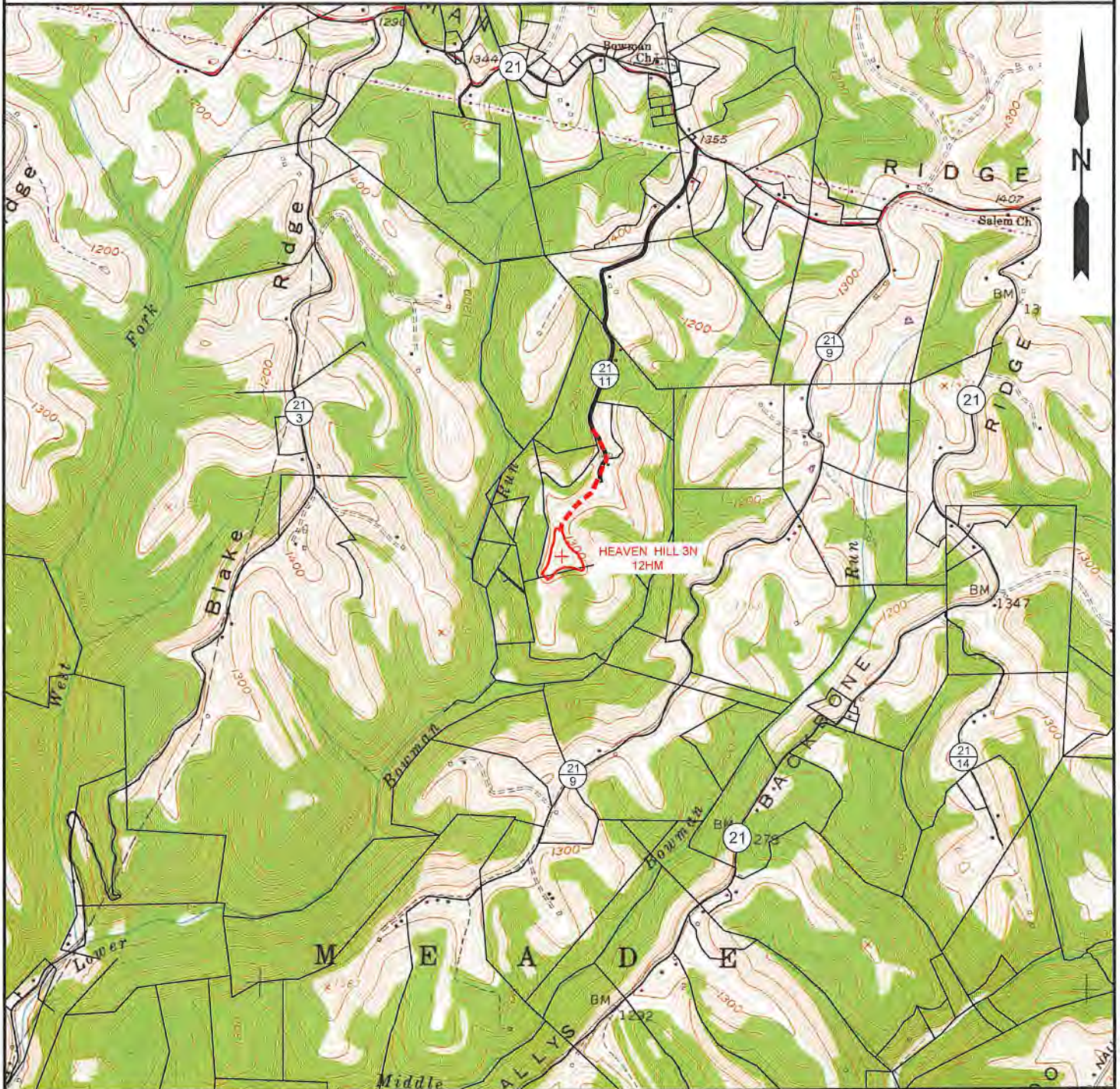
September 2019

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JAN 14 2020
WV Department of
Environmental Protection

WW-9

PROPOSED HEAVEN HILL 3N - 12HM

SUPPLEMENT PG. 2



NOTE: CLOSEST WATER PURVEYOR
CITY OF CAMERON - FRANK WALKER RESERVOIR
CAMDEN, WV

LAT: 39.829865
LON: -80.573724
LOCATED: N 77°44'18" E AT 34,474.56' FROM THE CENTER OF HEAVEN HILL 3N WELL PAD LOCATION.



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TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		06/21/2019	1" = 2000'



TUG HILL
OPERATING

10,902' B.H.

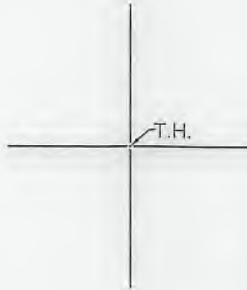
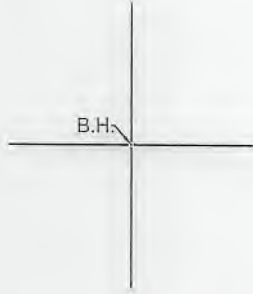
7,524' T.H.

HEAVEN HILL 3N
WELL 12HM
TUG HILL OPERATING

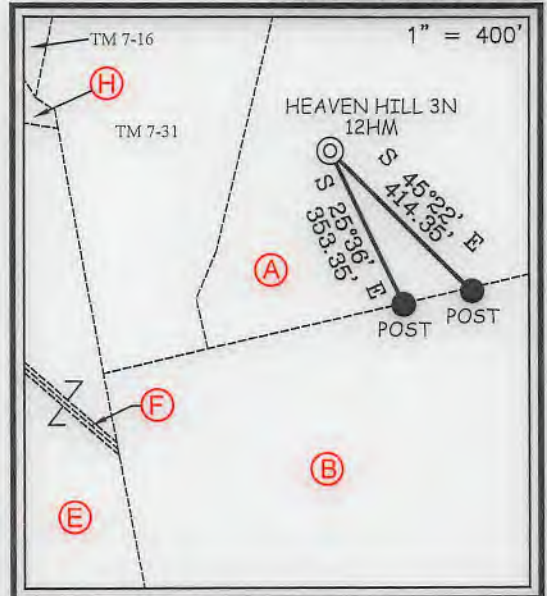
T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°50'00"

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
NAD'83 S.P.C.(FT)	N. 478,868.67	E. 1,633,235.65
NAD'83 GEO.	LAT-(N) 39.808623	LONG-(W) 80.693451
NAD'83 UTM (M)	N. 4,406,561.54	E. 526,239.86
<u>LANDING POINT</u>		
NAD'83 S.P.C.(FT)	N. 477,158.1	E. 1,633,215.1
NAD'83 GEO.	LAT-(N) 39.803927	LONG-(W) 80.693443
NAD'83 UTM (M)	N. 4,406,040.3	E. 526,242.3
<u>BOTTOM HOLE</u>		
NAD'83 S.P.C.(FT)	N. 483,307.8	E. 1,629,915.3
NAD'83 GEO.	LAT-(N) 39.820687	LONG-(W) 80.705481
NAD'83 UTM (M)	N. 4,407,897.0	E. 525,205.7

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



REFERENCES



NOTES ON SURVEY

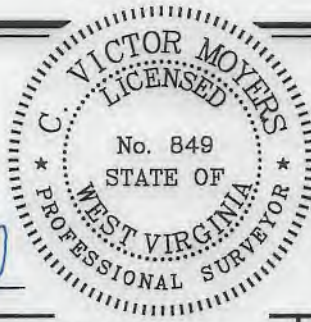
1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL, NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'



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

P.S. 849

C. Victor Moyers



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE AUGUST 30, 20 19
REVISED NOVEMBER 5, 20 19
OPERATORS WELL NO. HEAVEN HILL 3N-12HM
API WELL NO. 47-051-02304
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P12HMR.dwg
HEAVEN HILL 3-12HM REV2
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



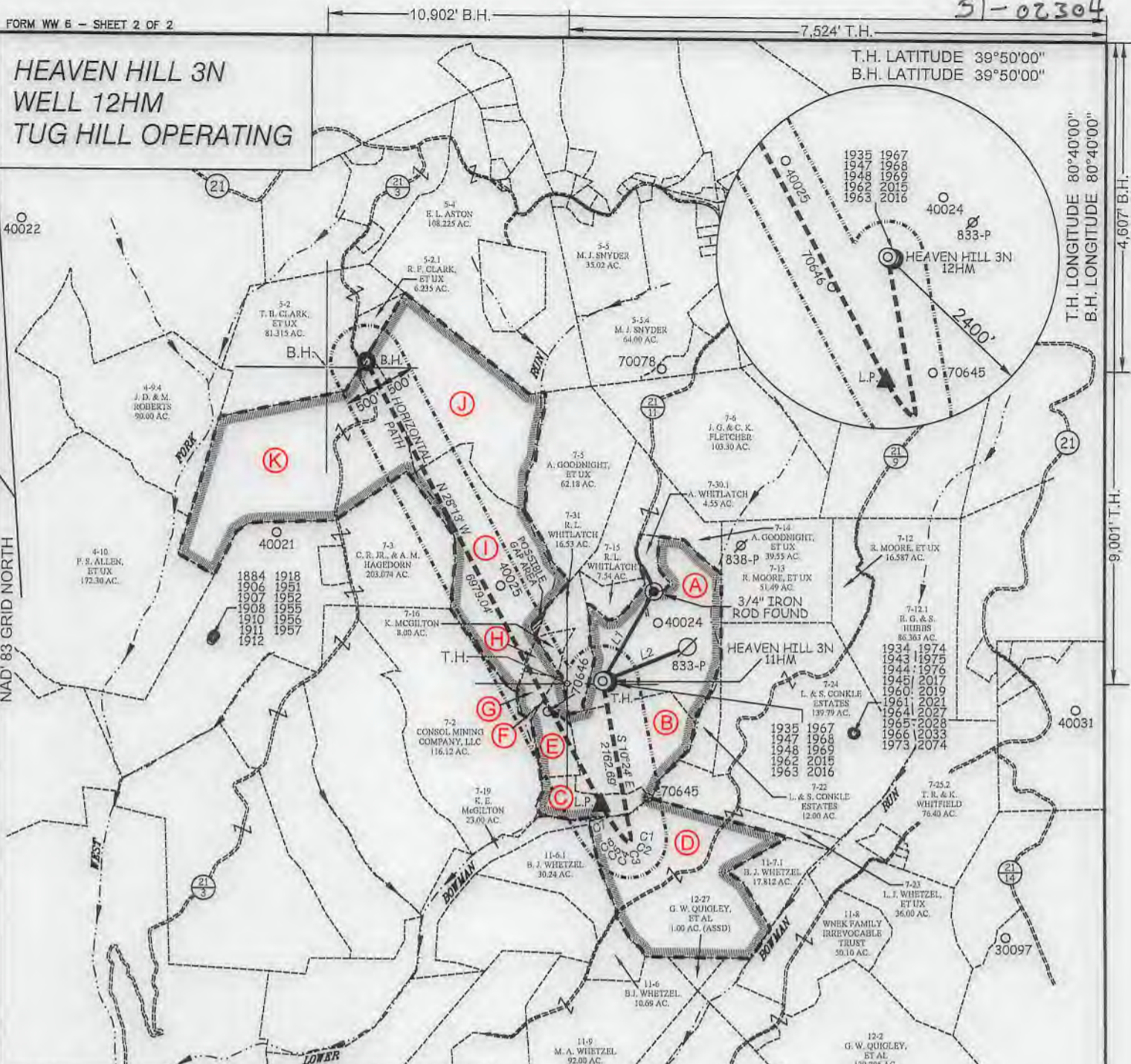
WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW
LOCATION: GROUND = 1,333.10' ELEVATION PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±
ROYALTY OWNER RICKY L. WHITLATCH, ET AL 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 MARCELLUS
ESTIMATED DEPTH TVD: 6,969' / TMD: 14,733'

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

**HEAVEN HILL 3N
WELL 12HM
TUG HILL OPERATING**

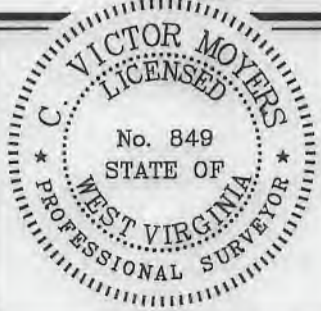


TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-21	42.22
C	KEVIN E. MCGILTON	9-7-20	13.39
D	BRENDA J. WHETZEL	9-11-7	82.858
E	KEVIN E. MCGILTON	9-7-18	14.00
F	RICKY L. WHITLATCH	NOT ASSD.	16' X 32P
G	KEVIN E. MCGILTON	9-7-17	5.12
H	RICKY L. WHITLATCH	NOT ASSD.	2.75
I	HELEN ROBERTSON PAYNE	9-7-4	78.95
J	HELEN ROBERTSON PAYNE	9-5-3	85.26
K	TERRI L. & HARIKIA SAMPSON	9-5-1	111.71

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 29°34' E	1459.33'
L2	N 67°34' E	1284.33'

CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	55.89'	252.45'	S 03°44' E	55.78'
C2	32.40'	47.96'	S 21°59' W	31.79'
C3	17.30'	23.59'	S 74°51' W	16.92'
C4	24.16'	67.44'	N 70°50' W	24.03'
C5	56.82'	265.58'	N 52°30' W	56.71'
C6	150.84'	998.98'	N 41°04' W	150.69'
C7	413.78'	2697.68'	N 32°08' W	413.37'

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www.slsww.com



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

P.S. 849 *C. Victor Moyers*

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)		
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BOTTOM HOLE		
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NAD'83 GEO.	LAT-(N) 39.820687	LONG-(W) 80.705481
NAD'83 UTM (M)	N. 4,407,897.0	E. 525,205.7

LEGEND	
LEASE LINE	
SURFACE LINE	
WELL LATERAL	
OFFSET LINE	
TIE LINE	
CREEK	
ROAD	
COUNTY ROUTE	
PROPOSED WELL	
EXISTING WELL	
PERMITTED WELL	
TAX MAP-PARCEL	00-00
SURFACE OWNER (SEE TABLE)	
LEASE # (SEE WW-6A1)	

SCALE	1" = 2000'	FILE NO.	8654P12HMR.dwg
		HEAVEN HILL 3-12HM REV2	
DATE	AUGUST 30		20 19
REVISED	NOVEMBER 5		20 19
OPERATORS WELL NO.	HEAVEN HILL 3N-12HM		
API WELL NO.	47		
NO.	STATE	COUNTY	PERMIT

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

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

COUNTY NAME
PERMIT

WW-6A1
(5/13)

Operator's Well No. Heaven Hill 3N-12HM

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

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

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

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


*See attached pages

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment
10*15557	9-7-30	A	RICKY L WHITTATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15557	9-7-21	B	RICKY L WHITTATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15667	9-7-20	C	KEVIN E MCGILTON AND TERESA E MCGILTON	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15720	9-7-20	C	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A
10*15721	9-7-20	C	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A
10*16020	9-7-20	C	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A
10*16028	9-7-20	C	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A
10*16051	9-7-20	C	DONNA JEAN SMIDER AND DAVID SMIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A
10*16053	9-7-20	C	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A
10*16289	9-7-20	C	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A
10*16412	9-7-20	C	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A
10*16413	9-7-20	C	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A
10*16852	9-7-20	C	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A
10*17622	9-7-20	C	DAVID E HINERMAN JR AN INCARCERATED PER BY & THRU COURT	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A
10*17646	9-11-7	D	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A	N/A
10*16021	9-11-7	D	TOMMY BONAR AND TANVA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A	N/A
10*16115	9-11-7	D	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A	N/A
10*16121	9-11-7	D	ISMAH BENNETT	TH EXPLORATION LLC	1/8+	933 105	N/A	N/A	N/A	N/A
10*16247	9-11-7	D	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A	N/A
10*17415	9-11-7	D	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A	N/A
10*17506	9-11-7	D	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A	N/A
10*17507	9-11-7	D	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A	N/A
10*47051.256.1	9-11-7	D	BRENDA J WHEITZEL	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A	N/A
10*47051.256.7	9-11-7	D	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A	N/A
10*47051.256.8	9-11-7	D	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A	N/A
10*47051.256.9	9-11-7	D	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A	N/A
10*47051.256.10	9-11-7	D	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A	N/A
10*47051.256.11	9-11-7	D	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A	N/A
10*47051.256.12	9-11-7	D	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A	N/A
10*47051.256.13	9-11-7	D	WILLIAM W CRAIG	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A	N/A
10*47051.256.14	9-11-7	D	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A	N/A
10*47051.256.15	9-11-7	D	ROY E AND CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 45	N/A	N/A	N/A	N/A
10*47051.256.16	9-11-7	D	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A	N/A
10*47051.256.17	9-11-7	D	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A	N/A
10*47051.256.18	9-11-7	D	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A	N/A
10*47051.256.19	9-11-7	D	MICHAEL DAVID PYLES AND CNITHIA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A	N/A
10*47051.256.20	9-11-7	D	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A	N/A
10*47051.256.21	9-11-7	D	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A	N/A
10*47051.256.22	9-11-7	D	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A	N/A
10*47051.256.23	9-11-7	D	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A	N/A
10*47051.256.24	9-11-7	D	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A	N/A

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment
10*15667	9-7-18	E	KEVIN E MCGILTON AND TERESA E MCGILTON	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15720	9-7-18	E	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A
10*15721	9-7-18	E	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A
10*16020	9-7-18	E	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A
10*16028	9-7-18	E	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A
10*16051	9-7-18	E	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A
10*16053	9-7-18	E	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A
10*16289	9-7-18	E	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A
10*16412	9-7-18	E	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A
10*16413	9-7-18	E	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A
10*16852	9-7-18	E	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A
10*17622	9-7-18	E	DAVID E HINERMAN JR AN INCARCERATED PER BY & THRU COURT APPTD GUARDIAN AS LITEM DAVID WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A
10*15557	NOT ASSD.	F	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15667	9-7-17	G	KEVIN E MCGILTON AND TERESA E MCGILTON	CHEVRON USA INC	1/8+	850 351	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*15720	9-7-17	G	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A	N/A
10*15721	9-7-17	G	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A	N/A
10*16020	9-7-17	G	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A	N/A
10*16028	9-7-17	G	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A	N/A
10*16051	9-7-17	G	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A	N/A
10*16053	9-7-17	G	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A	N/A
10*16289	9-7-17	G	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A	N/A
10*16412	9-7-17	G	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A	N/A
10*16413	9-7-17	G	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A	N/A
10*16852	9-7-17	G	KEVIN R DURBIN AND KRISTA A DURBIN	TH EXPLORATION LLC	1/8+	929 312	N/A	N/A	N/A	N/A
10*17622	9-7-17	G	DAVID E HINERMAN JR AN INCARCERATED PER BY & THRU COURT APPTD GUARDIAN AS LITEM DAVID WHITE ESQ	TH EXPLORATION LLC	1/8+	929 314	N/A	N/A	N/A	N/A
10*15557	NOT ASSD.	H	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	N/A	Chevron USA Inc to Tug Hill Exploration LLC: 36/148
10*21593	9-7-4	I	HELEN R PAYNE	CHEVRON USA INC	1/8+	791 38	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 42/435
10*21588	9-5-3	J	LAWRENCE ALLEN WAVT	CHESAPEAKE APPALACHIA LLC	1/8+	687 233	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 22/646	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 42/435
10*21591	9-5-3	J	BEATRICE ANN KIDD	CHESAPEAKE APPALACHIA LLC	1/8+	687 230	Statoil USA Onshore Properties Inc to Chevron USA Inc: 22/646	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 42/435
10*21585	9-5-1	K	TERRY L AND HARIKUA HEIDI SAMPSON	CHEVRON USA INC	1/8+	852 351	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 42/435

DPS LAND SERVICE
6000 TOWN CENTER BLDG STE 145
CANONSBURG, PA 15317-5841

BOOK 0036 PAGE 0148

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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B. 220

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Office of Oil and Gas

MAY 14 2020

WV Department of
Environmental Protection

COPY

STATE OF WEST VIRGINIA
COUNTY OF MARSHALL

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§

MEMORANDUM OF ASSIGNMENT OF OIL AND GAS LEASES

This **MEMORANDUM OF ASSIGNMENT OF OIL AND GAS LEASES** ("Memorandum") dated as of September 7th, 2018 (the "Effective Date"), is made by and between **Chevron U.S.A. Inc.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") and **TH Exploration, LLC**, Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 ("Assignee"). Chevron and Assignee are each referred to herein as a "Party" and collectively as the "Parties." Capitalized terms used but not defined herein shall have the meaning ascribed to those terms in that certain Assignment of Oil and Gas Leases between the Parties dated September 7th, 2018 ("Assignment").

- A. Notice is hereby given that the Parties have entered into the Assignment, pursuant to which Chevron assigned to Assignee all of Assignor's right, title, and interest in and to those certain Leases situated in Marshall County, West Virginia, less and except certain identified portions, as described in Exhibit "A", attached hereto and made a part hereof.
- B. Chevron does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under the Assignment and this Memorandum, unto the Assignee and its respective successors and assigns, against the lawful claims of Chevron, and all persons claiming, or to claim, the same or any part thereof, by, through or under Chevron.
- C. Preparation of this Memorandum has been a joint effort of the Parties and it must not be construed more severely against any of the Parties than against any other.
- D. This Memorandum is subject to and expressly incorporates the terms of the Assignment. The Assignment will govern to the extent of any conflict between the terms of this Memorandum and the Assignment.
- E. In consideration of the mutual promises set out in this Assignment, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

IN WITNESS WHEREOF, this Memorandum is executed this 7th day of September, 2018.

Marshall County
Jan Pest, Clerk
Instrument 1445509
09/11/2018 @ 02:17:18 PM
ASSIGNMENTS
Book 42 @ Page 435
Pages Recorded 7
Recording Cost \$ 13.00

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AN 14 2020



January 7, 2020

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

RE: Heaven Hill 3N-12HM

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-12HM 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,

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

Amy L. Miller
Permitting Specialist
Appalachia Region

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JAN 14 2020

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: 01/07/2020

API No. 47- 051 -
Operator's Well No. Heaven Hill 3N-12HM
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>526,239.86</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,561.54</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. Whitlatch</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

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

Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:

*PLEASE CHECK ALL THAT APPLY

- 1. NOTICE OF SEISMIC ACTIVITY or NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED
- 2. NOTICE OF ENTRY FOR PLAT SURVEY or NO PLAT SURVEY WAS CONDUCTED
- 3. NOTICE OF INTENT TO DRILL or NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)
- 4. NOTICE OF PLANNED OPERATION
- 5. PUBLIC NOTICE
- 6. NOTICE OF APPLICATION

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WV Department of
Environmental Protection

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- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED/ NOT REQUIRED
- RECEIVED
- RECEIVED
- RECEIVED

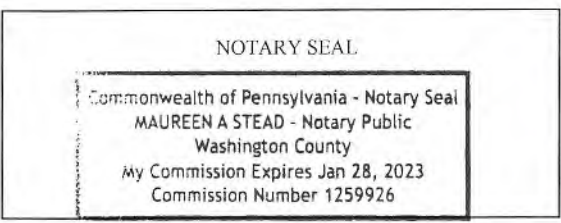
Required Attachments:

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

Certification of Notice is hereby given:

THEREFORE, I Amy L. Miller, 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>[Signature]</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 7 day of JANUARY 2020
[Signature] Notary Public
 My Commission Expires 1/28/23

Oil and Gas Privacy Notice:

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

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JAN 14 2020
WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47- 051 4705 02374
OPERATOR WELL NO. Heaven Hill 3N-12HM
Well Pad Name: Heaven Hill 3

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: 1/7/2020 **Date Permit Application Filed:** 1/8/2020

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: Amie 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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JAN 14 2020

4705 02304

WW-6A
(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3N-12HM
Well Pad Name: Heaven Hill 3

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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(8-13)

API NO. 47-051 -
OPERATOR WELL NO. Heaven Hill 3N-12HM
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.**

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(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3N-12HM
Well Pad Name: Heaven Hill 3

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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(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Heaven Hill 3N-12HM
Well Pad Name: Heaven Hill 3

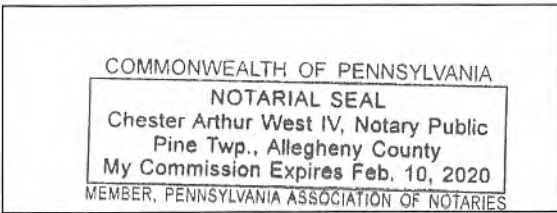
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 31 day of Dec, 2019.
[Signature] Notary Public
My Commission Expires 2-10-2020

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Environmental Protection

Exhibit WW-6A**Supplement Pg. 1A**

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

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

Well: Heaven Hill 3N – 12HM
District: Meade (Residence #1)
State: WV

There is one (1) residence, no business or commercial sites, no churches, no schools or emergency facilities within two-thousand feet (2,000') of the above referenced well location.

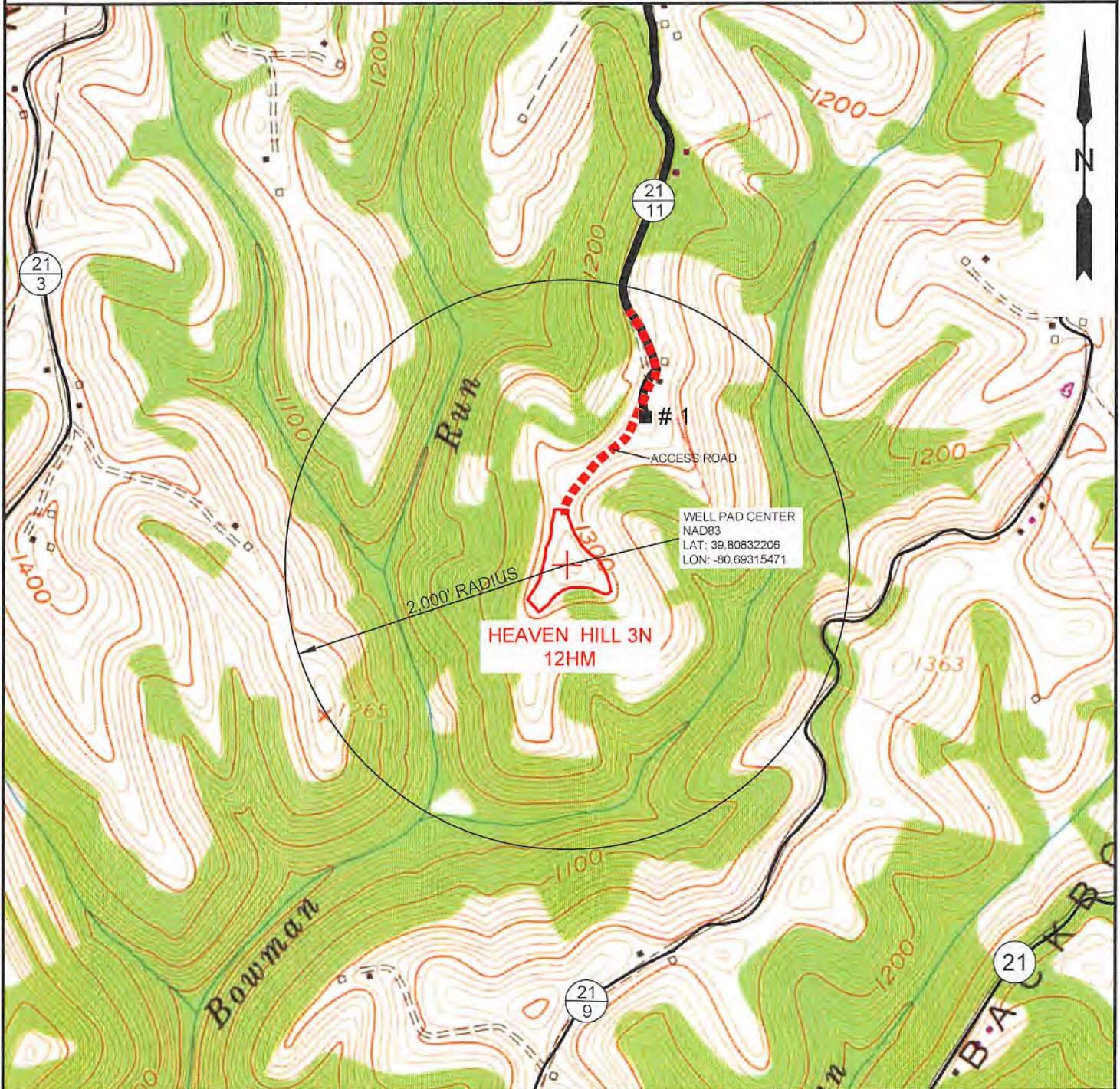
<p>Residence (#1) TM 7 Pcl. 30 Ricky L. Whitlatch Phone: 304-843-1168 Physical Address: 1044 Yeater Ln. Glen Easton, WV 26039 Tax Address: Same</p>

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PROPOSED HEAVEN HILL 3N - 12HM



NOTE: THERE APPEARS TO BE ONE (1) POSSIBLE WATER SOURCE WITHIN TWO THOUSAND FEET (2,000').

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 492-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	06/21/2019	1" = 1000'

TUG HILL
OPERATING

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

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

Date of Notice: 5/13/2019 **Date of Planned Entry:** 5/20/2019

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: 982 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

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WV Department of Environmental Protection

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>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: <u>Tug Hill Operating, LLC</u>	Address: <u>380 Southpointe Blvd., Soutpointe Plaza II, Suite 200</u>
Telephone: <u>724-0749-8388</u>	<u>Canonsburg, PA 15317</u>
Email: <u>amiller@tug-hilltop.com</u>	Facsimile: <u>724-338-2030</u>

Oil and Gas Privacy Notice:

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

Operator Well No. Heaven Hill Unit 3N-12HM

WW-6A3 Notice of Entry for Plat Survey Attachment 1 of 1

Mineral Owner(s):

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

Bounty Minerals III Acquisitions, LLC
777 Main Street – Suite 850
Ft. Worth, TX 76102

Andrew Whitlatch
942 Yeater Lane
Glen Easton, WV 26039

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

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

Date of Notice: 01/07/2020 **Date Permit Application Filed:** 01/08/2020

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

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

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

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

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

Notice is hereby given:

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

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>526,239.86</u>
County: <u>Marshall</u>		Northing: <u>4,406,561.54</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. Whittlatch</u>	
Watershed: <u>(HUC 10) Fish Creek</u>		

This Notice Shall Include:

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

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

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

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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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Operator Well No. Heaven Hill Unit 3N-12HM

WW-6A5 Notice of Entry for Plat Survey Attachment 1 of 1

Notice is hereby provided to the SURFACE OWNER(s):

Name: Arnie Goodnight, et ux
Address: 102 Goodnight Lane
Moundsville, WV 26041

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Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

Byrd E. White, III
 Secretary of Transportation/
 Commissioner of Highways

January 7, 2020

Jimmy Wriston, P. E.
 Deputy Secretary/
 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 Hill Unit 3 Pad, Marshal County

Heaven Hill 3N-12HM Well Site

Dear Mr. Martin,

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

This operator is in compliance with §22-6A-20 of the WV Code. 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 October 1, 2018.

Very Truly Yours,

Gary K. Clayton, P.E.
 Regional Operations 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-12HM

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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Environmental Protection

WEST VIRGINIA COUNTY MAP



WVDEP OOG
ACCEPTED AS-BUILT
3/1/2018

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

Pertinent Site Information
Heaven Hill 3 Site
Emergency Number: 304-845-1920
Meade District, Marshall County, WV
Watershed: Middle Fish Creek Watershed
Tug Hill Contact Number: 1-817-632-3400

Exhibit A: As-Built

Table with columns for Site Entrance and Center of Well Pad, listing coordinates and elevations.



Table listing well IDs (e.g., Heaven Hill 3-1HU, 3-2HU) and their corresponding coordinates and elevations.

Table listing well IDs (e.g., HILL 3N-1HUM, 3N-2HUM) and their coordinates and elevations.

Table listing well IDs (e.g., HILL 3N-3HUM, 3N-4HUM) and their coordinates and elevations.

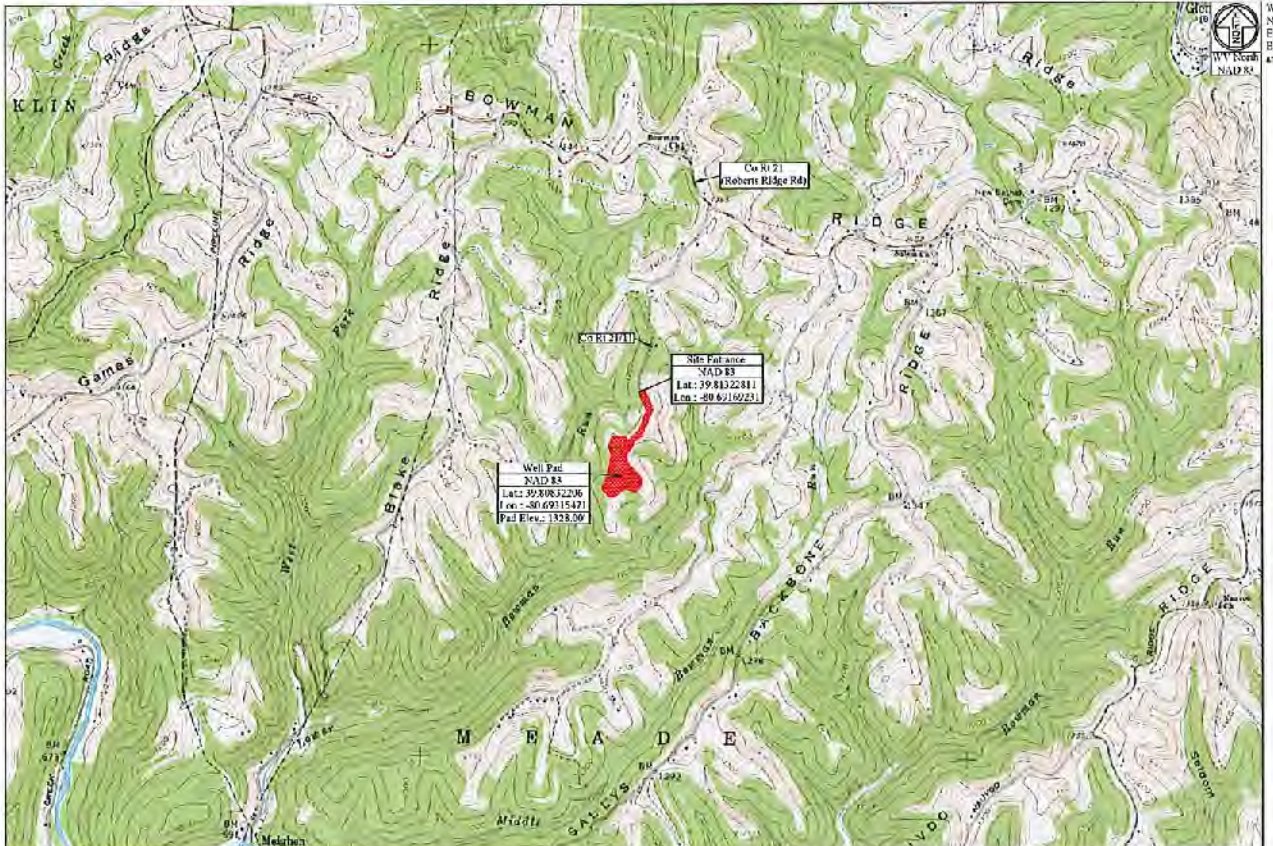


Table titled 'Property Owner Information - Heaven Hill 3 Site' showing land parcels, owners, and acreage.

Table titled 'Access Road' showing details for the access road, including start/end points and length.

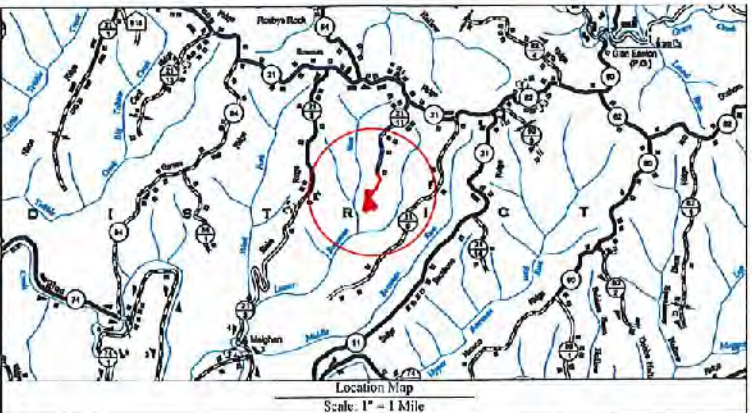
Table titled 'Disturbed Area' showing areas for well pad construction, access roads, and clearing.

Table titled 'Heaven Hill 3 Site Quantities' showing quantities for cut/fill, spoil, and erosion control materials.

Tables for Site Locations (NAD 27 and NAD 83) showing structure names, coordinates, and elevations.

Project Contacts
Tug Hill Operating, LLC
380 S. Main Street, Box 200
Coalwood, PA 15117

Approach Routes
From the intersection of 12th Street and WV Rt 2 in
Mountsville, WV. Follow WV Rt 2 South for 0.9 mi. Turn
Left onto State Rt 2 Alt. Follow State Rt 2 Alt for 2.36 mi. Turn
Left onto Co Rt 21 (Roberts Ridge Rd). Follow Co Rt 21 for
2.8 mi. Continue Straight onto Co Rt 21 (Roberts Ridge St
Joseph Rd). Follow Co Rt 21 for 4.4 mi. Turn Left to continue
on Co Rt 21 (Roberts Ridge Rd). Follow Co Rt 21 for 2.5 mi.
Turn Right onto Co Rt 21/1. Follow Co Rt 21/1 for 0.9 mi.
The site entrance will be at the end of the county road.



Environmental
Weed/Delimitation as per WV Dept. Ecology
4/13/2017, 2017
Topographic Information
The topographic information shown here is based on
aerial photography by Blue Mountain Aerial Mapping, Boston, WV

Floodplain Conditions
This site construction activities take place in a floodplain: ND
Flood Hazard Zone: ND
Flood Hazard Zone: ND
Flood Hazard Zone: ND

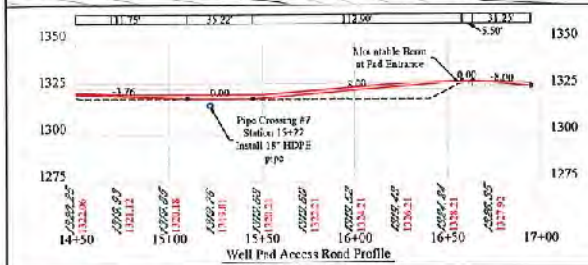
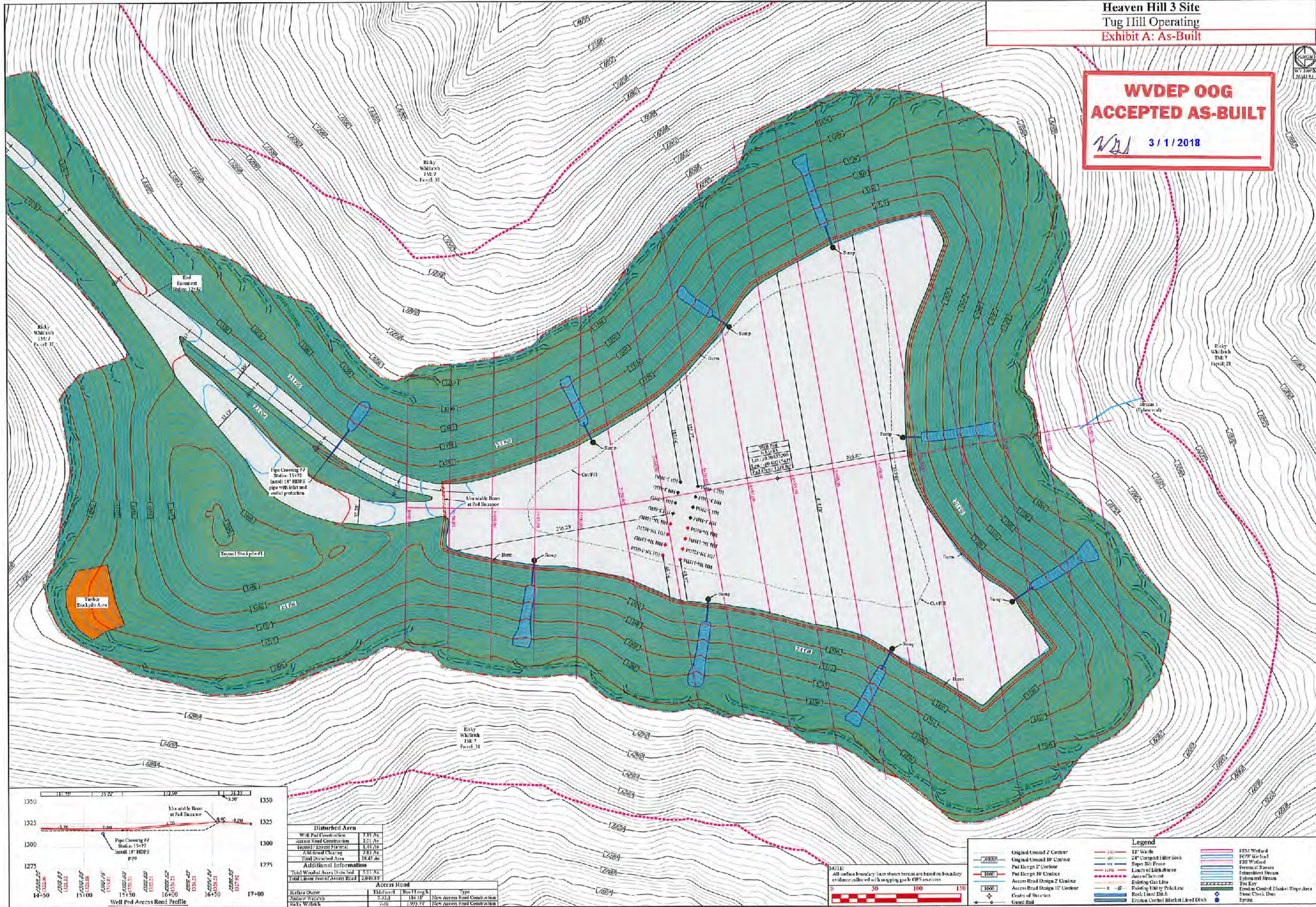


Well Location Restrictions
All well construction complies with the following restrictions:
* 250' from an existing well or developed spring used for human or domestic wildlife
* 25' from the edge of disturbance to wetlands, perennial streams, natural or artificial lakes, ponds or reservoirs
* 100' from the edge of disturbance to a naturally reproducing trout stream
* 1,000' of a surface or ground water intake to a public water supply.

Vertical sidebar containing 'TUG HILL OPERATING' logo, 'THIS DOCUMENT PREPARED FOR TUG HILL OPERATING', 'Killy Surveying', and 'Cover Sheet Heaven Hill 3 Site Meade District Marshall County, WV'.

**WVDEP OOG
ACCEPTED AS-BUILT**

WJL 3/1/2018



Disturbed Area	
Well Pad Construction	7.15 Ac
Access Road Construction	2.21 Ac
Access/Erosion Control	1.91 Ac
Additional Clearing	7.83 Ac
Total Disturbed Area	19.10 Ac

Additional Information	
Total Wooded Area Disturbed	7.01 Ac
Total Linear Foot of Access Road	2,846.15'

Access Road		
Station	EM-1000	Box 11 Rough
Andrew Whitlock	7-22-11	184.11'
Ricky Whitlock	7-30	1,995.78'

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

Legend	
Original Ground 2' Contour	12" Wall
Original Ground 10' Contour	24" Corrugated Filter Rock
Pad Design 2' Contour	Slope 50:1 Face
Pad Design 10' Contour	ESS Wetland
Access Road Design 2' Contour	Perennial Stream
Access Road Design 10' Contour	Intermittent Stream
Center of Structure	Ephemeral Stream
Utility Pole	Tree Key
	Existing Gas Line
	Rock Lined Ditch
	Erosion Control Blanket Lined Ditch
	Slope Check Dam
	Sump
	Stream (Fishway)

Revision: Design Modification
Design: Access Road As-Built

DATE: 02-28-2017
02-28-2017
02-28-2018

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly Surveying
Professional Surveyors
1000 W. Main Street
Martinsburg, WV 26150

Site Plan
Heaven Hill 3 Site
Meade District
Marshall County, WV

Date: 02/13/2018
Scale: As Shown
Designed By: ZS
File No:
Sheet 10 of 14