



west virginia department of environmental protection

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

Austin Caperton , Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Tuesday, February 27, 2018  
WELL WORK PERMIT  
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC  
1320 SOUTH UNIVERSITY DRIVE, SUITE 500

FORT WORTH , TX 76107

Re: Permit approval for HEAVEN HILL 3-6HU  
47-051-01968-00-00

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 3-6HU  
Farm Name: RICKY L WHITLATCH  
U.S. WELL NUMBER: 47-051-01968-00-00  
Horizontal 6A / New Drill  
Date Issued: 2/27/2018

Promoting a healthy environment.

03/02/2018

## PERMIT CONDITIONS

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

### CONDITIONS

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

## PERMIT CONDITIONS

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



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west virginia department of environmental protection

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Oil and Gas Conservation Commission  
601 57<sup>th</sup> Street, SE Charleston, WV 25304  
(304)926-0499, Ext 1656

Barry K. Lay, Chairman  
ogcc.wv.gov

February 5, 2018

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

RE: Application for Deep Well Permit – API #47-051-01968

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Heaven Hill 3-6HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton 7 ½'

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

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

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

Sincerely,

Susan Rose  
Administrator

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 3-6HU      Well Pad Name: Heaven Hill 3

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

4) Elevation, current ground: 1339'      Elevation, proposed post-construction: 1326'

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

(b) If Gas Shallow \_\_\_\_\_ Deep   
Horizontal

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Point Pleasant is the target formation at a depth of 11545' - 11679' thickness of 134' and anticipated pressure of approx. 7500 psi

8) Proposed Total Vertical Depth: 11,829'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 19,376'

11) Proposed Horizontal Leg Length: 7,028'

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

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

14) Approximate Saltwater Depths: 2,167'

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

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

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

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine  
Depth: 1031' TVD and 308' subsea level  
Seam: Pittsburgh #8  
Owner: Murray Energy / Consolidated Coal Co.

*JM*  
*1/26/18*

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1,088'	1,088'	1746ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,800'	2,800'	1974ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	47#	10,682'	10,682'	3485ft^3(CTS)
Production	5 1/2"	NEW	HPP110	23#	19,376'	19,376'	4620ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,419'	
Liners							

*pu*  
1/20/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	13,580	10,864	SEE#24	1.18
Tubing	2 3/8"			14,530	11,624		
Liners							

PACKERS

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

*John*  
*1/26/18*

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

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

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

Well to be completed with approximately 17,570,000 lb proppant and 271,645 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

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

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

23) Describe centralizer placement for each casing string:

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

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

\*See Attachment

25) Proposed borehole conditioning procedures:

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

\*Note: Attach additional sheets as needed.

**Conductor and Fresh Water Casing Cement:**

*Premium NE-1 + 2% CaCl*

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

**Coal Casing Cement:**

*Premium NE-1 + 1.5% CaCl + Flake*

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

**Intermediate Casing Cement:**

Lead: *Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170*

Tail: *Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate*

- Premium NE-1 – Class A Portland API spec
- BA-90 – Gas Migration Mitigator
- R-3 – Cement Retarder
- KCl – Potassium Chloride
- FP-13L – Anti-Foaming Agent
- MPA-170 – Gelling Agent
- CD-32 – Dispersant
- FL-52 – Fluid Loss Agent
- ASA-301 – Free Water Control Agent
- Sodium Metasilicate – Extending Agent

**Kick Off Plug:**

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

- CD-32 – Dispersant
- Sodium Metasilicate – Extending Agent
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent

**Production Casing Cement:**

Lead: *50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L*

Tail: *25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L*

- R-3 – Cement Retarder
- MPA-250 – Gelling Agent
- FP-13L – Anti-Foaming Agent





## Tug Hill Operating, LLC Casing and Cement Program

### Heaven Hill 3-6HU

#### Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,088'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,682'	CTS
Production	5 1/2"	HCP110	8 1/2"	19,376'	CTS

#### Cement

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

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

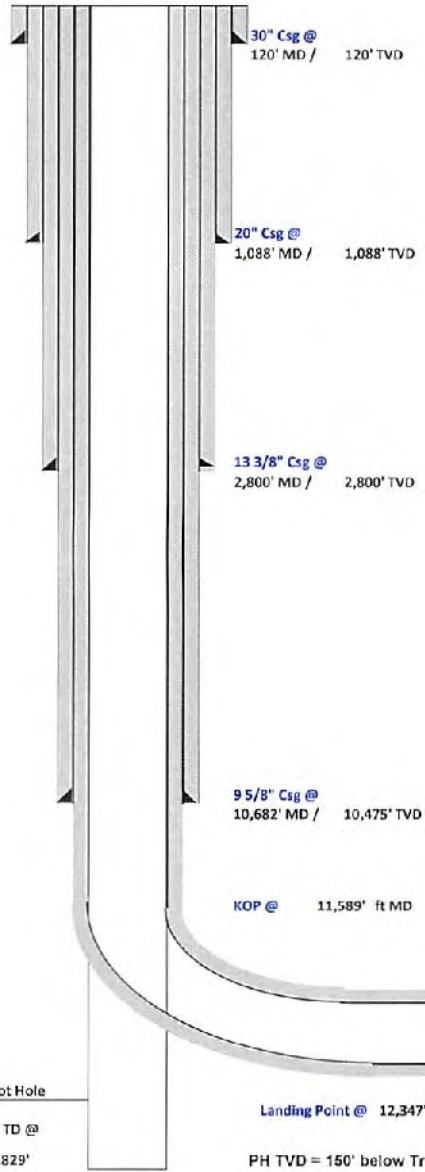
Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

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

8910-13



WELL NAME: Heaven Hill 3-6HU  
 STATE: West Virginia COUNTY: Marshall  
 DISTRICT: Meade  
 DF Elev: 1,326' GL Elev: 1,326'  
 TD: 19,376'  
 TH Latitude: 39.80865589  
 TH Longitude: -80.69330431  
 BH Latitude: 39.78428312  
 BH Longitude: -80.68379952



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1,038'
Sewidley Coal	946'
Pittsburgh Coal	1,031'
Big Line	2,060'
Berea	2,684'
Tully	6,617'
Marcellus	6,724'
Onondaga	6,776'
Salina	7,493'
Lockport	8,553'
Utica	11,374'
Point Pleasant	11,545'
Landing Depth	11,588'
Trenton	11,679'
Pilot Hole TD	11,829'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	1,088'	1,088'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,682'	10,475'	47	HPP110	Surface
Production	8 1/2	5 1/2	19,376'	11,711'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,883	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,830	A	14.5	Air	1 Centralizer every other jt
Production	3,970	A	15	Air / SOB M	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc

*Joe*  
1/26/18

Pilot Hole  
PH TD @  
11,829'

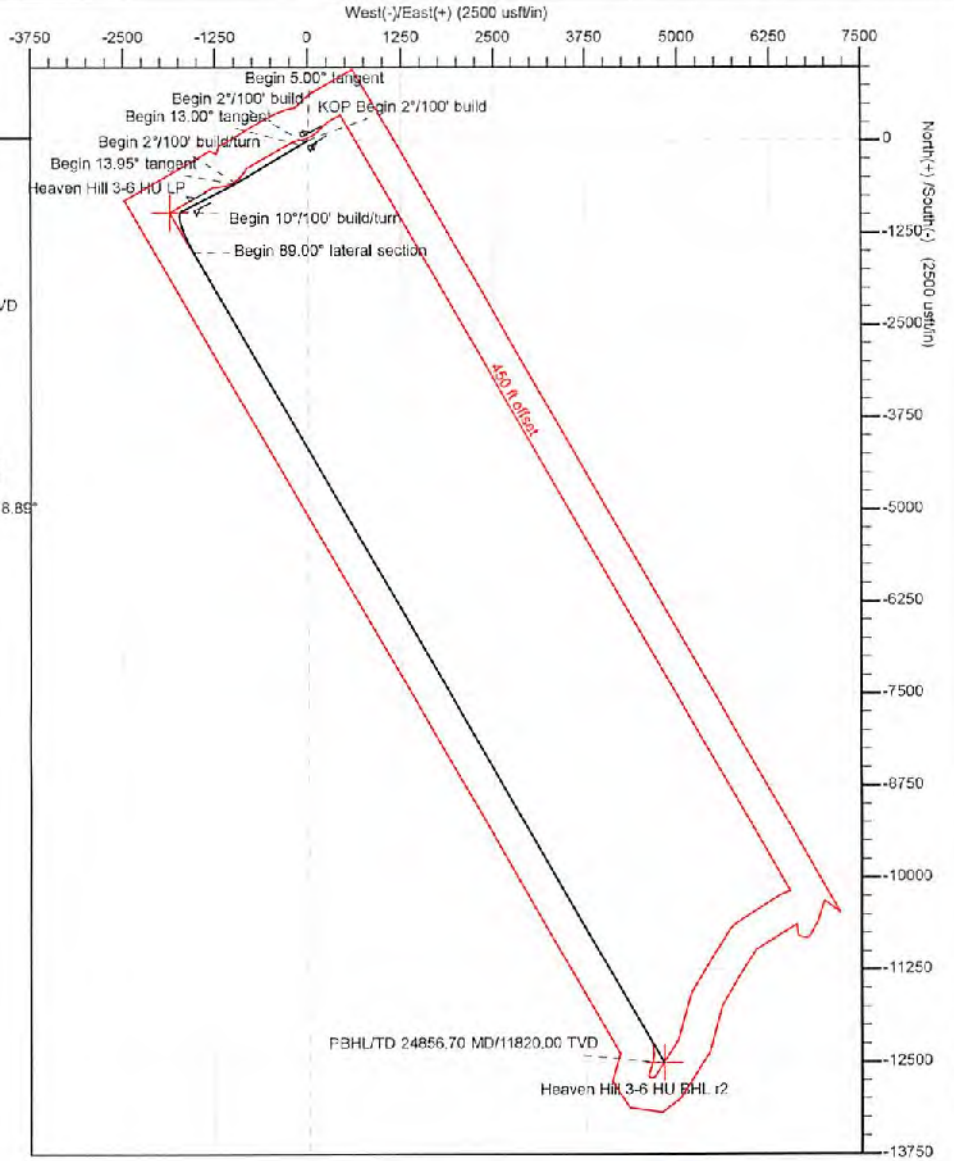
Landing Point @ 12,347' MD / 11,588' TVD  
PH TVD = 150' below Trenton Top

Lateral TD @ 19,376' ft MD  
11,711' ft TVD

SI-01968



Well: Heaven Hill 3-6 HU  
 Site: Heaven Hill 3  
 Project: Marshall County, West Virginia  
 Design: rev3  
 SECTION DETAILS



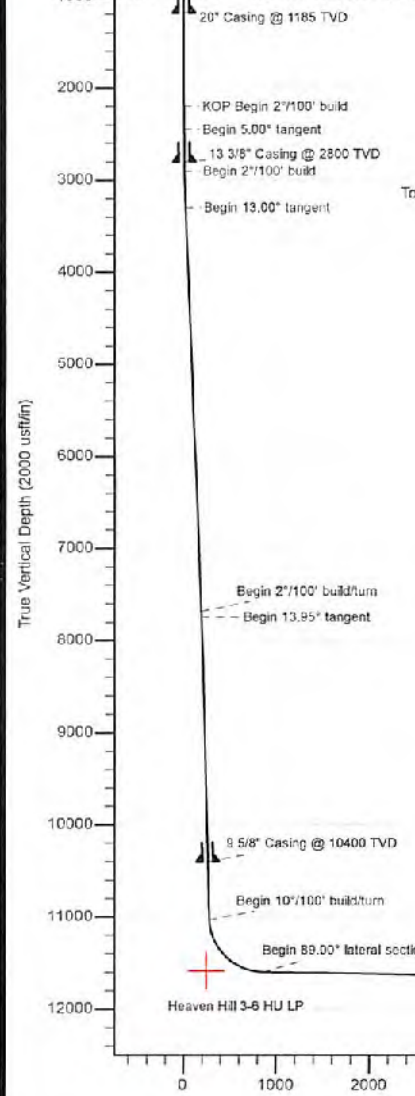
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dip	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2450.00	5.00	239.00	2449.68	-3.61	-9.34	2.00	239.00	1.69	KOP Begin 2 1/100' build
4	2902.04	5.00	239.00	2900.00	-25.91	-43.11	0.00	0.00	3.72	Begin 5.00° tangent
5	3302.04	13.00	239.00	3294.75	-58.11	-96.71	2.00	0.00	19.57	Begin 2 1/100' build
6	7002.04	13.00	239.00	7679.42	-578.47	-964.40	0.00	0.00	195.15	Begin 13.00° tangent
7	7969.09	13.95	243.07	7744.63	-587.02	-978.07	2.00	46.93	197.30	Begin 2 1/100' build/turn
8	11259.02	13.95	243.07	11034.53	-957.17	-1706.84	0.00	0.00	231.63	Begin 13.95° tangent
9	12156.70	89.00	150.00	11593.35	-1513.60	-1544.01	10.00	-83.22	859.37	Begin 10 1/100' build/turn
10	24856.70	89.00	150.00	11820.00	-12510.45	4865.03	0.00	0.00	3401.48	Begin 89.00° lateral section

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

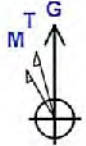
System Datum: Mean Sea Level  
 Depth Reference: GL=1326 @ 1326.00usft

Northing	Easting	Latitude	Longitude
14457206.09	1726546.42	39.80865589	-80.69330431

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.89°



Vertical Section at 158.93° (2000 usf/in)



Azimuths to Grid North  
 True North: -0.20°  
 Magnetic North: -8.88°

Magnetic Field  
 Strength: 52225.1snT  
 Dip Angle: 67.00°  
 Date: 2/3/2017  
 Model: IGRF2015



**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](mailto:dducoeur@dpslandservices.com) DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

## Request maps for:

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

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

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

Permit well - Heaven Hill 3-6HU

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
4705101934	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101962	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101963	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101947	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101948	Tug Hill	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705170646	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely, Probably an old shallow well that is not penetrating depths within 1000' of the Marcellus	Well records incomplete, part of orphaned well project. A field survey was conducted to locate this well and no evidence of this well was found.
4705100862	Hope Natural Gas	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow producing well that has since been plugged	Old well, records are incomplete. A field survey was conducted to locate this well and this well was found plugged at the location shown on the well plat.
4705100856	Hope Natural Gas	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow producing well that has since been plugged	Old well, records are incomplete. A field survey was conducted to locate this well and this well was found plugged at the location shown on the well plat.



Select County: (051) Marshall  
 Enter Permit #: 70646  
 Select datatypes: (Check All)  
 Location  Production  Plugging  
 Owner/Completion  Stratigraphy  Sample  
 Pay/Show/Water  Logs  Blm Hole Loc  
 [Get Data] [Reset]

- [Title Restrictions](#)
- [County Code Translations](#)
- [Permit Numbering Series](#)
- [Usage Notes](#)
- [Contact Information](#)
- [Disclaimer](#)
- [WVGES Main](#)
- ["Pipeline-Plus" New](#)

WV Geological & Economic Survey:

Well: County

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705170646	Marshall	70646	Meade	Glen Easton	Cameron	39.927431	-80.026161	528009.7	4408428.4

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION
4705170646	-/-	-/-	unknown	Prpty Maa. W J Watzel	1				OP=Blackshere	Oper in Min owner fd no code assign/Orphan well prc

Completion Information:

API	CMP_DT	SPOD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_F
4705170646	-/-	-/-	-/-	-/-	-/-	-/-	-/-	unclassified	unclassified	not available	unknown	unknown	-/-	-/-	-/-

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 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

51-01968



Select County: (051) Marshall  
 Enter Permit #: 00852  
 Select datatypes:  (Check All)  
 Location  Production  Plugging  
 Owner/Completion  Stratigraphy  Sample  
 Pay/ShowWater  Logs  Btm Hole Loc

[Table Descriptions](#)  
[County Code Translations](#)  
[Permit Numbering Series](#)  
[Usage Notes](#)  
[Contact Information](#)  
[Disclaimer](#)  
[WVGES Main](#)  
["Pipeline-Plus" New](#)

WV Geological & Economic Survey: Well: County = 51 Permit = 00862

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70859	51	862

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100852	Marshall	862	Meade	Glen Easton	Cameron	39.794224	-80.691968	528397.9	4404963.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLET
4705100852	11/14/2001	Plugging	Completed	David A Whetzel		M-242			Consolidation Coal Co	Consolidation Coal Co
4705100862	-/-	Original Les	Prpy Map	M E Cunningham		724				Hope Natural Gas Company

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD
4705100852	11/14/2001	11/11/2001								not available	unknown	unknown	
4705100862	-/-	-/-						unclassified	unclassified	not available	unknown	unknown	

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 Stratigraphy data for this well

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



Select County: (051) Marshall  
 Enter Permit #: 00856  
 Select datatypes:  (Check All)  
 Location  Production  Plugging  
 Owner/Completion  Stratigraphy  Sample  
 Pay/ShowWater  Logs  Btm Hole Loc

[Table Descriptions](#)  
[County Code Translations](#)  
[Permit Numbering Series](#)  
[Usage Notes](#)  
[Contact Information](#)  
[Disclaimer](#)  
[WVGES Main](#)  
["Pipeline-Plus" New](#)

WV Geological & Economic Survey: Well: County = 51 Permit = 00856

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70789	51	856

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100856	Marshall	856	Meade	Glen Easton	Cameron	39.750293	-80.695919	526609.6	4424529.5

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_1
4705100856	12/5/2000	Plugging	Completed	Kenneth & Delores McCordle		M-80			McElroy Coal Co	McElroy Coal Company	
4705100856	-/-	unknown	Prpy Map	Samuel Riggs		571				Hope Natural Gas Company	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW
4705100856	12/5/2000	11/14/2000								not available	unknown	unknown			
4705100856	-/-	-/-						unclassified	unclassified	not available	unknown	unknown			

There is no Pay data for this well

There is no Production Gas data for this well

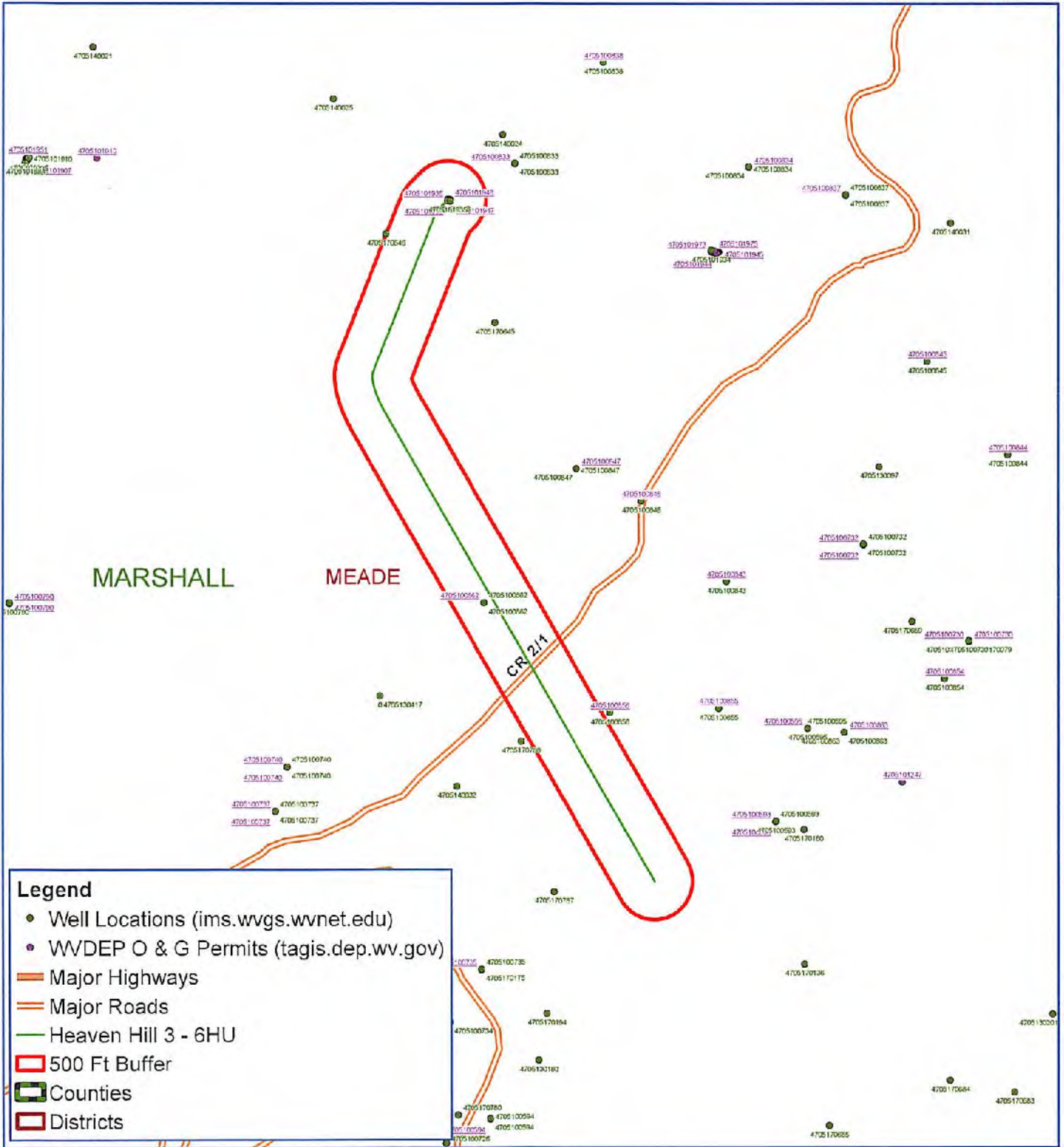
There is no Production Oil data for this well \*\* some operators may have reported NGL under Oil

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

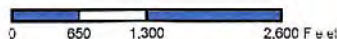


**Legend**

- Well Locations ([ims.wvgs.wvnet.edu](http://ims.wvgs.wvnet.edu))
- WVDEP O & G Permits ([tagis.dep.wv.gov](http://tagis.dep.wv.gov))
- Major Highways
- Major Roads
- Heaven Hill 3 - 6HU
- 500 Ft Buffer
- Counties
- Districts



# Heaven Hill 3-6HU Meade District Marshall County, WV



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





Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

<b>Project</b>	Marshall County, West Virginia		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 West Virginia - HARN		
<b>Map Zone:</b>	Zone 17N (64 W to 78 W)		

<b>Site</b>	Heaven Hill 3				
<b>Site Position:</b>		<b>Northing:</b>	14,457,178.77 usft	<b>Latitude:</b>	39.80858060
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,726,571.98 usft	<b>Longitude:</b>	-80.69321360
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.20 °

<b>Well</b>	Heaven Hill 3-6 HU					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	14,457,206.09 usft	<b>Latitude:</b>	39.80865589
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,726,546.42 usft	<b>Longitude:</b>	-80.69330431
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	1,326.00 usft

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	2/3/2017	-8.69	67.00	52,225.11223066

<b>Design</b>	rev3			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	158.99

<b>Plan Survey Tool Program</b>	<b>Date</b>	6/27/2017		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	24,856.70 rev3 (Original Hole)	MWD MWD - Standard	





Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,450.00	5.00	239.00	2,449.68	-5.61	-9.34	2.00	2.00	0.00	239.00	
2,902.04	5.00	239.00	2,900.00	-25.91	-43.11	0.00	0.00	0.00	0.00	
3,302.04	13.00	239.00	3,294.75	-58.11	-96.71	2.00	2.00	0.00	0.00	
7,802.04	13.00	239.00	7,679.42	-579.47	-964.40	0.00	0.00	0.00	0.00	
7,869.09	13.95	243.07	7,744.63	-587.02	-978.07	2.00	1.42	6.06	46.93	
11,259.02	13.95	243.07	11,034.58	-957.17	-1,706.64	0.00	0.00	0.00	0.00	
12,156.70	89.00	150.00	11,598.35	-1,513.60	-1,544.01	10.00	8.36	-10.37	-93.22	
24,856.70	89.00	150.00	11,820.00	-12,510.45	4,805.03	0.00	0.00	0.00	0.00	Heaven Hill 3-6 HU B



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,457,206.09	1,726,546.42	39.80865589	-80.69330431	
<b>KOP Begin 2°/100' build</b>										
2,300.00	2.00	239.00	2,299.98	-0.90	-1.50	14,457,205.20	1,726,544.92	39.80865344	-80.69330965	
2,400.00	4.00	239.00	2,399.84	-3.59	-5.98	14,457,202.50	1,726,540.43	39.80864608	-80.69332565	
2,450.00	5.00	239.00	2,449.66	-5.61	-9.34	14,457,200.48	1,726,537.07	39.80864056	-80.69333765	
<b>Begin 5.00° tangent</b>										
2,500.00	5.00	239.00	2,499.49	-7.86	-13.08	14,457,198.24	1,726,533.34	39.80863443	-80.69335098	
2,600.00	5.00	239.00	2,599.11	-12.35	-20.55	14,457,193.75	1,726,525.86	39.80862217	-80.69337764	
2,700.00	5.00	239.00	2,698.73	-16.84	-28.02	14,457,189.26	1,726,518.39	39.80860992	-80.69340429	
2,800.00	5.00	239.00	2,798.35	-21.33	-35.49	14,457,184.77	1,726,510.92	39.80859766	-80.69343095	
2,900.00	5.00	239.00	2,897.97	-25.81	-42.96	14,457,180.28	1,726,503.45	39.80858540	-80.69345761	
2,902.04	5.00	239.00	2,900.00	-25.91	-43.11	14,457,180.19	1,726,503.30	39.80858515	-80.69345815	
<b>Begin 2°/100' build</b>										
3,000.00	6.96	239.00	2,997.42	-31.16	-51.86	14,457,174.93	1,726,494.55	39.80857080	-80.69348836	
3,100.00	8.96	239.00	3,096.46	-38.29	-63.73	14,457,167.60	1,726,482.66	39.80855133	-80.69353171	
3,200.00	10.96	239.00	3,194.94	-47.20	-78.55	14,457,158.89	1,726,467.86	39.80852701	-80.69358460	
3,300.00	12.96	239.00	3,292.77	-57.87	-96.32	14,457,148.22	1,726,450.10	39.80849787	-80.69364798	
3,302.04	13.00	239.00	3,294.75	-58.11	-96.71	14,457,147.99	1,726,449.71	39.80849722	-80.69364938	
<b>Begin 13.00° tangent</b>										
3,400.00	13.00	239.00	3,390.21	-69.46	-115.60	14,457,136.64	1,726,430.82	39.80846623	-80.69371677	
3,500.00	13.00	239.00	3,487.64	-81.04	-134.88	14,457,125.05	1,726,411.54	39.80843460	-80.69378557	
3,600.00	13.00	239.00	3,585.08	-92.63	-154.16	14,457,113.47	1,726,392.25	39.80840296	-80.69385436	
3,700.00	13.00	239.00	3,682.52	-104.21	-173.44	14,457,101.88	1,726,372.97	39.80837132	-80.69392318	
3,800.00	13.00	239.00	3,779.95	-115.80	-192.72	14,457,090.29	1,726,353.69	39.80833969	-80.69399198	
3,900.00	13.00	239.00	3,877.39	-127.39	-212.01	14,457,078.71	1,726,334.41	39.80830805	-80.69406078	
4,000.00	13.00	239.00	3,974.83	-138.97	-231.29	14,457,067.12	1,726,315.13	39.80827641	-80.69412958	
4,100.00	13.00	239.00	4,072.27	-150.56	-250.57	14,457,055.54	1,726,295.84	39.80824478	-80.69419838	
4,200.00	13.00	239.00	4,169.70	-162.14	-269.85	14,457,043.95	1,726,276.56	39.80821314	-80.69426718	
4,300.00	13.00	239.00	4,267.14	-173.73	-289.14	14,457,032.36	1,726,257.28	39.80818150	-80.69433598	
4,400.00	13.00	239.00	4,364.58	-185.32	-308.42	14,457,020.78	1,726,238.00	39.80814987	-80.69440478	
4,500.00	13.00	239.00	4,462.01	-196.90	-327.70	14,457,009.19	1,726,218.72	39.80811823	-80.69447358	
4,600.00	13.00	239.00	4,559.45	-208.49	-346.98	14,456,997.61	1,726,199.43	39.80808659	-80.69454238	



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,700.00	13.00	239.00	4,656.89	-220.07	-366.26	14,456,986.02	1,726,180.15	39.80805496	-80.69461118
4,800.00	13.00	239.00	4,754.32	-231.66	-385.55	14,456,974.43	1,726,180.87	39.80802332	-80.69467998
4,900.00	13.00	239.00	4,851.76	-243.24	-404.83	14,456,962.85	1,726,141.59	39.80799168	-80.69474878
5,000.00	13.00	239.00	4,949.20	-254.83	-424.11	14,456,951.26	1,726,122.31	39.80796005	-80.69481758
5,100.00	13.00	239.00	5,046.64	-266.42	-443.39	14,456,939.68	1,726,103.02	39.80792841	-80.69488638
5,200.00	13.00	239.00	5,144.07	-278.00	-462.67	14,456,928.09	1,726,083.74	39.80789677	-80.69495518
5,300.00	13.00	239.00	5,241.51	-289.59	-481.96	14,456,916.51	1,726,064.46	39.80786513	-80.69502398
5,400.00	13.00	239.00	5,338.95	-301.17	-501.24	14,456,904.92	1,726,045.18	39.80783350	-80.69509278
5,500.00	13.00	239.00	5,436.38	-312.76	-520.52	14,456,893.33	1,726,025.90	39.80780186	-80.69516158
5,600.00	13.00	239.00	5,533.82	-324.35	-539.80	14,456,881.75	1,726,006.61	39.80777022	-80.69523038
5,700.00	13.00	239.00	5,631.26	-335.93	-559.08	14,456,870.18	1,725,987.33	39.80773859	-80.69529917
5,800.00	13.00	239.00	5,728.69	-347.52	-578.37	14,456,858.58	1,725,968.05	39.80770695	-80.69536797
5,900.00	13.00	239.00	5,826.13	-359.10	-597.65	14,456,846.99	1,725,948.77	39.80767531	-80.69543677
6,000.00	13.00	239.00	5,923.57	-370.69	-616.93	14,456,835.40	1,725,929.48	39.80764367	-80.69550557
6,100.00	13.00	239.00	6,021.01	-382.27	-636.21	14,456,823.82	1,725,910.20	39.80761204	-80.69557437
6,200.00	13.00	239.00	6,118.44	-393.86	-655.49	14,456,812.23	1,725,890.92	39.80758040	-80.69564317
6,300.00	13.00	239.00	6,215.88	-405.45	-674.78	14,456,800.65	1,725,871.64	39.80754876	-80.69571197
6,400.00	13.00	239.00	6,313.32	-417.03	-694.06	14,456,789.06	1,725,852.36	39.80751712	-80.69578077
6,500.00	13.00	239.00	6,410.75	-428.62	-713.34	14,456,777.48	1,725,833.07	39.80748549	-80.69584957
6,600.00	13.00	239.00	6,508.19	-440.20	-732.62	14,456,765.89	1,725,813.79	39.80745385	-80.69591837
6,700.00	13.00	239.00	6,605.63	-451.79	-751.90	14,456,754.30	1,725,794.51	39.80742221	-80.69598717
6,800.00	13.00	239.00	6,703.06	-463.38	-771.19	14,456,742.72	1,725,775.23	39.80739057	-80.69605596
6,900.00	13.00	239.00	6,800.50	-474.96	-790.47	14,456,731.13	1,725,755.95	39.80735894	-80.69612476
7,000.00	13.00	239.00	6,897.94	-486.55	-809.75	14,456,719.55	1,725,736.66	39.80732730	-80.69619356
7,100.00	13.00	239.00	6,995.38	-498.13	-829.03	14,456,707.96	1,725,717.38	39.80729566	-80.69626236
7,200.00	13.00	239.00	7,092.81	-509.72	-848.32	14,456,696.37	1,725,698.10	39.80726402	-80.69633116
7,300.00	13.00	239.00	7,190.25	-521.31	-867.60	14,456,684.79	1,725,678.82	39.80723238	-80.69639996
7,400.00	13.00	239.00	7,287.69	-532.89	-886.88	14,456,673.20	1,725,659.54	39.80720075	-80.69646875
7,500.00	13.00	239.00	7,385.12	-544.48	-906.16	14,456,661.62	1,725,640.25	39.80716911	-80.69653755
7,600.00	13.00	239.00	7,482.56	-556.06	-925.44	14,456,650.03	1,725,620.97	39.80713747	-80.69660635
7,700.00	13.00	239.00	7,580.00	-567.65	-944.73	14,456,638.45	1,725,601.69	39.80710583	-80.69667515
7,800.00	13.00	239.00	7,677.43	-579.23	-964.01	14,456,626.86	1,725,582.41	39.80707419	-80.69674395
7,802.04	13.00	239.00	7,679.42	-579.47	-964.40	14,456,626.62	1,725,582.01	39.80707355	-80.69674535
<b>Begin 2°/100' build/turn</b>									
7,889.09	13.95	243.07	7,744.63	-587.02	-978.07	14,456,619.06	1,725,568.34	39.80705295	-80.69679412
<b>Begin 13.95° tangent</b>									
7,900.00	13.95	243.07	7,774.63	-590.39	-984.71	14,456,615.70	1,725,561.70	39.80704375	-80.69681781
8,000.00	13.95	243.07	7,871.68	-601.31	-1,006.21	14,456,604.78	1,725,540.21	39.80701396	-80.69689447
8,100.00	13.95	243.07	7,968.73	-612.23	-1,027.70	14,456,593.86	1,725,518.72	39.80698417	-80.69697113
8,200.00	13.95	243.07	8,065.78	-623.15	-1,049.19	14,456,582.95	1,725,497.22	39.80695439	-80.69704779
8,300.00	13.95	243.07	8,162.83	-634.07	-1,070.68	14,456,572.03	1,725,475.73	39.80692460	-80.69712445
8,400.00	13.95	243.07	8,259.88	-644.99	-1,092.18	14,456,561.11	1,725,454.24	39.80689481	-80.69720111
8,500.00	13.95	243.07	8,356.93	-655.91	-1,113.67	14,456,550.19	1,725,432.75	39.80686502	-80.69727777
8,600.00	13.95	243.07	8,453.98	-666.83	-1,135.16	14,456,539.27	1,725,411.25	39.80683524	-80.69735443
8,700.00	13.95	243.07	8,551.03	-677.75	-1,156.65	14,456,528.35	1,725,389.76	39.80680545	-80.69743109
8,800.00	13.95	243.07	8,648.08	-688.66	-1,178.14	14,456,517.43	1,725,368.27	39.80677566	-80.69750775
8,900.00	13.95	243.07	8,745.13	-699.58	-1,199.64	14,456,506.51	1,725,346.78	39.80674587	-80.69758441
9,000.00	13.95	243.07	8,842.18	-710.50	-1,221.13	14,456,495.59	1,725,325.29	39.80671609	-80.69766107
9,100.00	13.95	243.07	8,939.24	-721.42	-1,242.62	14,456,484.67	1,725,303.79	39.80668630	-80.69773772
9,200.00	13.95	243.07	9,036.29	-732.34	-1,264.11	14,456,473.75	1,725,282.30	39.80665651	-80.69781438
9,300.00	13.95	243.07	9,133.34	-743.26	-1,285.61	14,456,462.83	1,725,260.81	39.80662672	-80.69789104
9,400.00	13.95	243.07	9,230.39	-754.18	-1,307.10	14,456,451.91	1,725,239.32	39.80659693	-80.69796770
9,500.00	13.95	243.07	9,327.44	-765.10	-1,328.59	14,456,440.99	1,725,217.82	39.80656715	-80.69804436
9,600.00	13.95	243.07	9,424.49	-776.02	-1,350.08	14,456,430.07	1,725,196.33	39.80653735	-80.69812102



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-6 HU
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-6 HU	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,700.00	13.95	243.07	9,521.54	-786.94	-1,371.57	14,456,419.16	1,725,174.84	39.80650757	-80.69819768
9,800.00	13.95	243.07	9,618.59	-797.86	-1,393.07	14,456,408.24	1,725,153.35	39.80647778	-80.69827434
9,900.00	13.95	243.07	9,715.64	-808.78	-1,414.58	14,456,397.32	1,725,131.86	39.80644799	-80.69835099
10,000.00	13.95	243.07	9,812.69	-819.70	-1,436.05	14,456,386.40	1,725,110.36	39.80641821	-80.69842765
10,100.00	13.95	243.07	9,909.74	-830.62	-1,457.54	14,456,375.48	1,725,088.87	39.80638842	-80.69850431
10,200.00	13.95	243.07	10,006.79	-841.54	-1,479.04	14,456,364.56	1,725,067.38	39.80635863	-80.69858097
10,300.00	13.95	243.07	10,103.84	-852.45	-1,500.53	14,456,353.64	1,725,045.89	39.80632884	-80.69865763
10,400.00	13.95	243.07	10,200.90	-863.37	-1,522.02	14,456,342.72	1,725,024.39	39.80629905	-80.69873429
10,500.00	13.95	243.07	10,297.95	-874.29	-1,543.51	14,456,331.80	1,725,002.90	39.80626926	-80.69881094
10,600.00	13.95	243.07	10,395.00	-885.21	-1,565.01	14,456,320.88	1,724,981.41	39.80623947	-80.69888760
10,700.00	13.95	243.07	10,492.05	-896.13	-1,586.50	14,456,309.96	1,724,959.92	39.80620969	-80.69896426
10,800.00	13.95	243.07	10,589.10	-907.05	-1,607.99	14,456,299.04	1,724,938.43	39.80617990	-80.69904092
10,900.00	13.95	243.07	10,686.15	-917.97	-1,629.48	14,456,288.12	1,724,916.93	39.80615011	-80.69911757
11,000.00	13.95	243.07	10,783.20	-928.89	-1,650.97	14,456,277.20	1,724,895.44	39.80612032	-80.69919423
11,100.00	13.95	243.07	10,880.25	-939.81	-1,672.47	14,456,266.28	1,724,873.95	39.80609053	-80.69927089
11,200.00	13.95	243.07	10,977.30	-950.73	-1,693.96	14,456,255.37	1,724,852.46	39.80606074	-80.69934755
11,259.02	13.95	243.07	11,034.58	-957.17	-1,706.64	14,456,244.92	1,724,839.77	39.80604316	-80.69939279
<b>Begin 10°/100' build/turn</b>									
11,300.00	14.31	226.28	11,074.34	-962.91	-1,714.71	14,456,243.18	1,724,831.71	39.80602747	-80.69942158
11,400.00	19.17	195.27	11,170.26	-987.35	-1,728.00	14,456,218.75	1,724,818.42	39.80596049	-80.69946918
11,500.00	26.94	178.95	11,262.29	-1,025.93	-1,731.91	14,456,180.16	1,724,814.50	39.80585456	-80.69948360
11,600.00	35.78	169.88	11,347.85	-1,077.50	-1,726.35	14,456,128.60	1,724,820.07	39.80571290	-80.69946439
11,700.00	45.06	164.08	11,423.72	-1,140.47	-1,711.46	14,456,065.62	1,724,834.95	39.80553982	-80.69941214
11,800.00	54.55	159.92	11,488.21	-1,212.94	-1,687.71	14,455,993.15	1,724,858.70	39.80534058	-80.69932845
11,900.00	64.14	156.65	11,539.14	-1,292.71	-1,655.82	14,455,913.38	1,724,890.59	39.80512122	-80.69921584
12,000.00	73.80	153.88	11,574.99	-1,377.35	-1,616.75	14,455,828.74	1,724,929.66	39.80488842	-80.69907775
12,100.00	83.50	151.37	11,594.65	-1,464.29	-1,571.70	14,455,741.81	1,724,974.72	39.80464925	-80.69891838
12,156.70	89.00	150.00	11,598.35	-1,513.60	-1,544.01	14,455,692.49	1,725,002.41	39.80451357	-80.69882037
<b>Begin 89.00° lateral section</b>									
12,200.00	89.00	150.00	11,599.11	-1,551.09	-1,522.36	14,455,655.00	1,725,024.05	39.80441040	-80.69874374
12,300.00	89.00	150.00	11,600.86	-1,637.68	-1,472.37	14,455,568.41	1,725,074.05	39.80417215	-80.69856678
12,400.00	89.00	150.00	11,602.60	-1,724.27	-1,422.38	14,455,481.82	1,725,124.04	39.80393389	-80.69838982
12,500.00	89.00	150.00	11,604.35	-1,810.86	-1,372.38	14,455,395.23	1,725,174.03	39.80369563	-80.69821286
12,600.00	89.00	150.00	11,606.09	-1,897.45	-1,322.39	14,455,308.64	1,725,224.02	39.80345737	-80.69803589
12,700.00	89.00	150.00	11,607.84	-1,984.04	-1,272.40	14,455,222.05	1,725,274.01	39.80321911	-80.69785894
12,800.00	89.00	150.00	11,609.58	-2,070.63	-1,222.41	14,455,135.46	1,725,324.01	39.80298085	-80.69768198
12,900.00	89.00	150.00	11,611.33	-2,157.22	-1,172.42	14,455,048.87	1,725,374.00	39.80274259	-80.69750502
13,000.00	89.00	150.00	11,613.07	-2,243.81	-1,122.42	14,454,962.29	1,725,423.99	39.80250433	-80.69732807
13,100.00	89.00	150.00	11,614.82	-2,330.40	-1,072.43	14,454,875.70	1,725,473.98	39.80226607	-80.69715111
13,200.00	89.00	150.00	11,616.56	-2,416.99	-1,022.44	14,454,789.11	1,725,523.98	39.80202781	-80.69697416
13,300.00	89.00	150.00	11,618.31	-2,503.58	-972.45	14,454,702.52	1,725,573.97	39.80178955	-80.69679721
13,400.00	89.00	150.00	11,620.05	-2,590.17	-922.45	14,454,615.93	1,725,623.96	39.80155129	-80.69662026
13,500.00	89.00	150.00	11,621.80	-2,676.76	-872.46	14,454,529.34	1,725,673.95	39.80131303	-80.69644331
13,600.00	89.00	150.00	11,623.54	-2,763.35	-822.47	14,454,442.75	1,725,723.95	39.80107477	-80.69626636
13,700.00	89.00	150.00	11,625.29	-2,849.93	-772.48	14,454,356.16	1,725,773.94	39.80083650	-80.69608941
13,800.00	89.00	150.00	11,627.03	-2,936.52	-722.48	14,454,269.57	1,725,823.93	39.80059824	-80.69591246
13,900.00	89.00	150.00	11,628.78	-3,023.11	-672.49	14,454,182.98	1,725,873.92	39.80035998	-80.69573552
14,000.00	89.00	150.00	11,630.52	-3,109.70	-622.50	14,454,096.39	1,725,923.92	39.80012172	-80.69555858
14,100.00	89.00	150.00	11,632.27	-3,196.29	-572.51	14,454,009.80	1,725,973.91	39.79988345	-80.69538163
14,200.00	89.00	150.00	11,634.02	-3,282.88	-522.51	14,453,923.21	1,726,023.90	39.79964519	-80.69520469
14,300.00	89.00	150.00	11,635.76	-3,369.47	-472.52	14,453,836.62	1,726,073.89	39.79940693	-80.69502775
14,400.00	89.00	150.00	11,637.51	-3,456.06	-422.53	14,453,750.03	1,726,123.89	39.79916866	-80.69485082
14,500.00	89.00	150.00	11,639.25	-3,542.65	-372.54	14,453,663.44	1,726,173.88	39.79893040	-80.69467388
14,600.00	89.00	150.00	11,641.00	-3,629.24	-322.54	14,453,576.86	1,726,223.87	39.79869213	-80.69449694



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,700.00	89.00	150.00	11,642.74	-3,715.83	-272.55	14,453,490.27	1,726,273.86	39.79045387	-80.69432001	
14,800.00	89.00	150.00	11,644.49	-3,802.42	-222.56	14,453,403.68	1,726,323.86	39.79821560	-80.69414307	
14,900.00	89.00	150.00	11,646.23	-3,889.01	-172.57	14,453,317.09	1,726,373.85	39.79797734	-80.69396614	
15,000.00	89.00	150.00	11,647.98	-3,975.60	-122.58	14,453,230.50	1,726,423.84	39.79773907	-80.69378921	
15,100.00	89.00	150.00	11,649.72	-4,062.19	-72.58	14,453,143.91	1,726,473.83	39.79750081	-80.69361228	
15,200.00	89.00	150.00	11,651.47	-4,148.77	-22.59	14,453,057.32	1,726,523.82	39.79726254	-80.69343555	
15,300.00	89.00	150.00	11,653.21	-4,235.36	27.40	14,452,970.73	1,726,573.82	39.79702428	-80.69325842	
15,400.00	89.00	150.00	11,654.96	-4,321.95	77.39	14,452,884.14	1,726,623.81	39.79678601	-80.69308150	
15,500.00	89.00	150.00	11,656.70	-4,408.54	127.39	14,452,797.55	1,726,673.80	39.79654774	-80.69290457	
15,600.00	89.00	150.00	11,658.45	-4,495.13	177.38	14,452,710.96	1,726,723.79	39.79630947	-80.69272765	
15,700.00	89.00	150.00	11,660.19	-4,581.72	227.37	14,452,624.37	1,726,773.79	39.79607121	-80.69255073	
15,800.00	89.00	150.00	11,661.94	-4,668.31	277.36	14,452,537.78	1,726,823.78	39.79583294	-80.69237380	
15,900.00	89.00	150.00	11,663.68	-4,754.90	327.36	14,452,451.19	1,726,873.77	39.79559467	-80.69219688	
16,000.00	89.00	150.00	11,665.43	-4,841.49	377.35	14,452,364.60	1,726,923.76	39.79535640	-80.69201996	
16,100.00	89.00	150.00	11,667.17	-4,928.08	427.34	14,452,278.02	1,726,973.76	39.79511813	-80.69184305	
16,200.00	89.00	150.00	11,668.92	-5,014.67	477.33	14,452,191.43	1,727,023.75	39.79487987	-80.69166613	
16,300.00	89.00	150.00	11,670.67	-5,101.26	527.33	14,452,104.84	1,727,073.74	39.79464160	-80.69148922	
16,400.00	89.00	150.00	11,672.41	-5,187.85	577.32	14,452,018.25	1,727,123.73	39.79440333	-80.69131230	
16,500.00	89.00	150.00	11,674.16	-5,274.44	627.31	14,451,931.66	1,727,173.73	39.79416506	-80.69113539	
16,600.00	89.00	150.00	11,675.90	-5,361.03	677.30	14,451,845.07	1,727,223.72	39.79392679	-80.69095848	
16,700.00	89.00	150.00	11,677.65	-5,447.62	727.30	14,451,758.48	1,727,273.71	39.79368852	-80.69078157	
16,800.00	89.00	150.00	11,679.39	-5,534.20	777.29	14,451,671.89	1,727,323.70	39.79345025	-80.69060466	
16,900.00	89.00	150.00	11,681.14	-5,620.79	827.28	14,451,585.30	1,727,373.70	39.79321198	-80.69042775	
17,000.00	89.00	150.00	11,682.88	-5,707.38	877.27	14,451,498.71	1,727,423.69	39.79297371	-80.69025084	
17,100.00	89.00	150.00	11,684.63	-5,793.97	927.26	14,451,412.12	1,727,473.68	39.79273543	-80.69007394	
17,200.00	89.00	150.00	11,686.37	-5,880.56	977.26	14,451,325.53	1,727,523.67	39.79249716	-80.68989703	
17,300.00	89.00	150.00	11,688.12	-5,967.15	1,027.25	14,451,238.94	1,727,573.66	39.79225889	-80.68972013	
17,400.00	89.00	150.00	11,689.86	-6,053.74	1,077.24	14,451,152.35	1,727,623.66	39.79202062	-80.68954323	
17,500.00	89.00	150.00	11,691.61	-6,140.33	1,127.23	14,451,065.76	1,727,673.65	39.79178235	-80.68936633	
17,600.00	89.00	150.00	11,693.35	-6,226.92	1,177.23	14,450,979.17	1,727,723.64	39.79154407	-80.68918943	
17,700.00	89.00	150.00	11,695.10	-6,313.51	1,227.22	14,450,892.59	1,727,773.63	39.79130580	-80.68901253	
17,800.00	89.00	150.00	11,696.84	-6,400.10	1,277.21	14,450,806.00	1,727,823.63	39.79106753	-80.68883563	
17,900.00	89.00	150.00	11,698.58	-6,486.69	1,327.20	14,450,719.41	1,727,873.62	39.79082925	-80.68865873	
18,000.00	89.00	150.00	11,700.33	-6,573.28	1,377.20	14,450,632.82	1,727,923.61	39.79059098	-80.68848184	
18,100.00	89.00	150.00	11,702.08	-6,659.87	1,427.19	14,450,546.23	1,727,973.60	39.79035271	-80.68830495	
18,200.00	89.00	150.00	11,703.82	-6,746.46	1,477.18	14,450,459.64	1,728,023.60	39.79011443	-80.68812805	
18,300.00	89.00	150.00	11,705.57	-6,833.04	1,527.17	14,450,373.05	1,728,073.59	39.78987616	-80.68795116	
18,400.00	89.00	150.00	11,707.32	-6,919.63	1,577.17	14,450,286.46	1,728,123.58	39.78963788	-80.68777427	
18,500.00	89.00	150.00	11,709.06	-7,006.22	1,627.16	14,450,199.87	1,728,173.57	39.78939961	-80.68759738	
18,600.00	89.00	150.00	11,710.81	-7,092.81	1,677.15	14,450,113.28	1,728,223.57	39.78916133	-80.68742050	
18,700.00	89.00	150.00	11,712.55	-7,179.40	1,727.14	14,450,026.69	1,728,273.56	39.78892306	-80.68724361	
18,800.00	89.00	150.00	11,714.30	-7,265.99	1,777.14	14,449,940.10	1,728,323.55	39.78868478	-80.68706673	
18,900.00	89.00	150.00	11,716.04	-7,352.58	1,827.13	14,449,853.51	1,728,373.54	39.78844650	-80.68688984	
19,000.00	89.00	150.00	11,717.79	-7,439.17	1,877.12	14,449,766.92	1,728,423.54	39.78820823	-80.68671296	
19,100.00	89.00	150.00	11,719.53	-7,525.76	1,927.11	14,449,680.33	1,728,473.53	39.78796995	-80.68653608	
19,200.00	89.00	150.00	11,721.28	-7,612.35	1,977.10	14,449,593.75	1,728,523.52	39.78773167	-80.68635920	
19,300.00	89.00	150.00	11,723.02	-7,698.94	2,027.10	14,449,507.16	1,728,573.51	39.78749340	-80.68618232	
19,400.00	89.00	150.00	11,724.77	-7,785.53	2,077.09	14,449,420.57	1,728,623.50	39.78725512	-80.68600544	
19,500.00	89.00	150.00	11,726.51	-7,872.12	2,127.08	14,449,333.98	1,728,673.50	39.78701684	-80.68582857	
19,600.00	89.00	150.00	11,728.26	-7,958.71	2,177.07	14,449,247.39	1,728,723.49	39.78677856	-80.68565169	
19,700.00	89.00	150.00	11,730.00	-8,045.30	2,227.07	14,449,160.80	1,728,773.48	39.78654028	-80.68547482	
19,800.00	89.00	150.00	11,731.75	-8,131.89	2,277.06	14,449,074.21	1,728,823.47	39.78630200	-80.68529794	
19,900.00	89.00	150.00	11,733.49	-8,218.47	2,327.05	14,448,987.62	1,728,873.47	39.78606373	-80.68512107	
20,000.00	89.00	150.00	11,735.24	-8,305.06	2,377.04	14,448,901.03	1,728,923.46	39.78582545	-80.68494420	
20,100.00	89.00	150.00	11,736.98	-8,391.65	2,427.04	14,448,814.44	1,728,973.45	39.78558717	-80.68476733	



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,200.00	89.00	150.00	11,736.73	-8,478.24	2,477.03	14,448,727.85	1,729,023.44	39.78534889	-80.68459046
20,300.00	89.00	150.00	11,740.47	-8,564.83	2,527.02	14,448,641.26	1,729,073.44	39.78511061	-80.68441360
20,400.00	89.00	150.00	11,742.22	-8,651.42	2,577.01	14,448,554.67	1,729,123.43	39.78487233	-80.68423673
20,500.00	89.00	150.00	11,743.97	-8,738.01	2,627.01	14,448,468.08	1,729,173.42	39.78463405	-80.68405967
20,600.00	89.00	150.00	11,745.71	-8,824.60	2,677.00	14,448,381.49	1,729,223.41	39.78439576	-80.68388301
20,700.00	89.00	150.00	11,747.46	-8,911.19	2,726.99	14,448,294.90	1,729,273.41	39.78415748	-80.68370614
20,800.00	89.00	150.00	11,749.20	-8,997.78	2,776.98	14,448,208.32	1,729,323.40	39.78391920	-80.68352928
20,900.00	89.00	150.00	11,750.95	-9,084.37	2,826.98	14,448,121.73	1,729,373.39	39.78368092	-80.68335242
21,000.00	89.00	150.00	11,752.69	-9,170.96	2,876.97	14,448,035.14	1,729,423.38	39.78344264	-80.68317557
21,100.00	89.00	150.00	11,754.44	-9,257.55	2,926.96	14,447,948.55	1,729,473.38	39.78320436	-80.68299871
21,200.00	89.00	150.00	11,756.18	-9,344.14	2,976.95	14,447,861.96	1,729,523.37	39.78296607	-80.68282185
21,300.00	89.00	150.00	11,757.93	-9,430.73	3,026.95	14,447,775.37	1,729,573.36	39.78272779	-80.68264500
21,400.00	89.00	150.00	11,759.67	-9,517.31	3,076.94	14,447,688.78	1,729,623.35	39.78248951	-80.68246814
21,500.00	89.00	150.00	11,761.42	-9,603.90	3,126.93	14,447,602.19	1,729,673.34	39.78225122	-80.68229129
21,600.00	89.00	150.00	11,763.16	-9,690.49	3,176.92	14,447,515.60	1,729,723.34	39.78201294	-80.68211444
21,700.00	89.00	150.00	11,764.91	-9,777.08	3,226.91	14,447,429.01	1,729,773.33	39.78177466	-80.68193759
21,800.00	89.00	150.00	11,766.65	-9,863.67	3,276.91	14,447,342.42	1,729,823.32	39.78153637	-80.68176074
21,900.00	89.00	150.00	11,768.40	-9,950.26	3,326.90	14,447,255.83	1,729,873.31	39.78129809	-80.68158390
22,000.00	89.00	150.00	11,770.14	-10,036.85	3,376.89	14,447,169.24	1,729,923.31	39.78105980	-80.68140705
22,100.00	89.00	150.00	11,771.89	-10,123.44	3,426.88	14,447,082.65	1,729,973.30	39.78082152	-80.68123021
22,200.00	89.00	150.00	11,773.63	-10,210.03	3,476.88	14,446,996.06	1,730,023.29	39.78058323	-80.68105336
22,300.00	89.00	150.00	11,775.38	-10,296.62	3,526.87	14,446,909.48	1,730,073.28	39.78034495	-80.68087652
22,400.00	89.00	150.00	11,777.12	-10,383.21	3,576.86	14,446,822.89	1,730,123.28	39.78010666	-80.68069968
22,500.00	89.00	150.00	11,778.87	-10,469.80	3,626.85	14,446,736.30	1,730,173.27	39.77986838	-80.68052284
22,600.00	89.00	150.00	11,780.62	-10,556.39	3,676.85	14,446,649.71	1,730,223.26	39.77963009	-80.68034600
22,700.00	89.00	150.00	11,782.36	-10,642.98	3,726.84	14,446,563.12	1,730,273.25	39.77939180	-80.68016916
22,800.00	89.00	150.00	11,784.11	-10,729.57	3,776.83	14,446,476.53	1,730,323.25	39.77915352	-80.67999233
22,900.00	89.00	150.00	11,785.85	-10,816.15	3,826.82	14,446,389.94	1,730,373.24	39.77891523	-80.67981549
23,000.00	89.00	150.00	11,787.60	-10,902.74	3,876.82	14,446,303.35	1,730,423.23	39.77867694	-80.67963866
23,100.00	89.00	150.00	11,789.34	-10,989.33	3,926.81	14,446,216.76	1,730,473.22	39.77843865	-80.67946182
23,200.00	89.00	150.00	11,791.09	-11,075.92	3,976.80	14,446,130.17	1,730,523.22	39.77820036	-80.67928499
23,300.00	89.00	150.00	11,792.83	-11,162.51	4,026.79	14,446,043.58	1,730,573.21	39.77796208	-80.67910816
23,400.00	89.00	150.00	11,794.58	-11,249.10	4,076.79	14,445,956.99	1,730,623.20	39.77772379	-80.67893133
23,500.00	89.00	150.00	11,796.32	-11,335.69	4,126.78	14,445,870.40	1,730,673.19	39.77748550	-80.67875451
23,600.00	89.00	150.00	11,798.07	-11,422.28	4,176.77	14,445,783.81	1,730,723.18	39.77724721	-80.67857768
23,700.00	89.00	150.00	11,799.81	-11,508.87	4,226.76	14,445,697.22	1,730,773.18	39.77700892	-80.67840085
23,800.00	89.00	150.00	11,801.56	-11,595.46	4,276.75	14,445,610.64	1,730,823.17	39.77677063	-80.67822403
23,900.00	89.00	150.00	11,803.30	-11,682.05	4,326.75	14,445,524.05	1,730,873.16	39.77653234	-80.67804721
24,000.00	89.00	150.00	11,805.05	-11,768.64	4,376.74	14,445,437.46	1,730,923.15	39.77629405	-80.67787039
24,100.00	89.00	150.00	11,806.79	-11,855.23	4,426.73	14,445,350.87	1,730,973.15	39.77605576	-80.67769356
24,200.00	89.00	150.00	11,808.54	-11,941.82	4,476.72	14,445,264.28	1,731,023.14	39.77581747	-80.67751675
24,300.00	89.00	150.00	11,810.28	-12,028.41	4,526.72	14,445,177.69	1,731,073.13	39.77557918	-80.67733993
24,400.00	89.00	150.00	11,812.03	-12,115.00	4,576.71	14,445,091.10	1,731,123.12	39.77534089	-80.67716311
24,500.00	89.00	150.00	11,813.77	-12,201.58	4,626.70	14,445,004.51	1,731,173.12	39.77510259	-80.67698630
24,600.00	89.00	150.00	11,815.52	-12,288.17	4,676.69	14,444,917.92	1,731,223.11	39.77486430	-80.67680948
24,700.00	89.00	150.00	11,817.27	-12,374.76	4,726.69	14,444,831.33	1,731,273.10	39.77462601	-80.67663267
24,800.00	89.00	150.00	11,819.01	-12,461.35	4,776.68	14,444,744.74	1,731,323.09	39.77438772	-80.67645586
24,856.70	89.00	150.00	11,820.00	-12,510.45	4,805.03	14,444,658.15	1,731,351.44	39.77425260	-80.67635560

PBHL/TD 24856.70 MD/11820.00 TVD



Planning Report - Geographic

<b>Database:</b>	DB_Jul2216dt_v14	<b>Local Co-ordinate Reference:</b>	Well Heaven Hill 3-6 HU
<b>Company:</b>	Tug Hill Operating LLC	<b>TVD Reference:</b>	GL=1326 @ 1326.00usft
<b>Project:</b>	Marshall County, West Virginia	<b>MD Reference:</b>	GL=1326 @ 1326.00usft
<b>Site:</b>	Heaven Hill 3	<b>North Reference:</b>	Grid
<b>Well:</b>	Heaven Hill 3-6 HU	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Original Hole		
<b>Design:</b>	rev3		

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 3-6 HU LP - plan misses target center by 274.67usft at 11700.00usft MD (11423.72 TVD, -1140.47 N, -1711.46 E) - Point	0.00	0.00	11,588.00	-978.95	-1,861.03	14,456,227.14	1,724,685.39	39.80598477	-80.689994276
Heaven Hill 3-6 HU BHL - plan hits target center - Point	0.00	0.00	11,820.00	-12,510.45	4,805.03	14,444,695.64	1,731,351.44	39.77425260	-80.67635560

Casing Points						
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter		
(usft)	(usft)		(")	(")		
120.00	120.00	30" Casing @ 120 TVD	30	36		
1,185.00	1,185.00	20" Casing @ 1185 TVD	20	24		
2,801.66	2,800.00	13 3/8" Casing @ 2800 TVD	13-3/8	17		
10,605.16	10,400.00	9 5/8" Casing @ 10400 TVD	9-5/8	12-1/4		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N-S	+E-W		
(usft)	(usft)	(usft)	(usft)		
2,200.00	2,200.00	0.00	0.00	KOP Begin 2"/100' build	
2,450.00	2,449.68	-5.61	-9.34	Begin 5.00° tangent	
2,902.04	2,900.00	-25.91	-43.11	Begin 2"/100' build	
3,302.04	3,294.75	-58.11	-96.71	Begin 13.00° tangent	
7,802.04	7,679.42	-579.47	-964.40	Begin 2"/100' build/turn	
7,869.09	7,744.63	-587.02	-978.07	Begin 13.95° tangent	
11,259.02	11,034.58	-857.17	-1,706.64	Begin 10"/100' build/turn	
12,156.70	11,598.35	-1,513.60	-1,544.01	Begin 89.00° lateral section	
24,856.70	11,820.00	-12,510.45	4,805.03	PBHL/TD 24856.70 MD/11820.00 TVD	

WW-9  
(4/16)

API Number 47 - 051 - 01968  
Operator's Well No. Heaven Hill 3-6HU

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

RECEIVED  
Office of Oil and Gas

SEP - 6 2017

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851  
Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 7.5'

WV Department of Environmental Protection

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 / WV0105185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386428)

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.

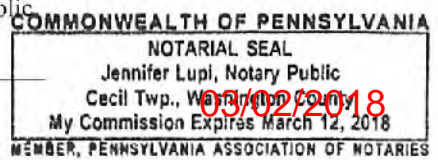
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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 [Signature]  
Company Official (Typed Name) Sean Gasser  
Company Official Title Engineer

Subscribed and sworn before me this 8th day of June, 20 17

Jennifer Lupi Notary Public  
My commission expires March 12, 2018





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

RECEIVED  
Office of Oil and Gas

SEP - 6 2017

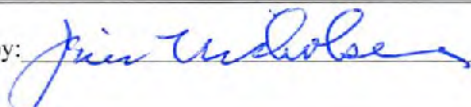
WV Department of  
Environmental Protection

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:



Comments:

Title: Oil & Gas Inspector

Date: 8/31/17

Field Reviewed?

Yes

No



# Well Site Safety Plan

## Tug Hill Operating, LLC

*ju*  
*1/26/18*

Well Name: Heaven Hill 3-6HU

Pad Location: Heaven Hill Unit 3

Marshall County, West Virginia

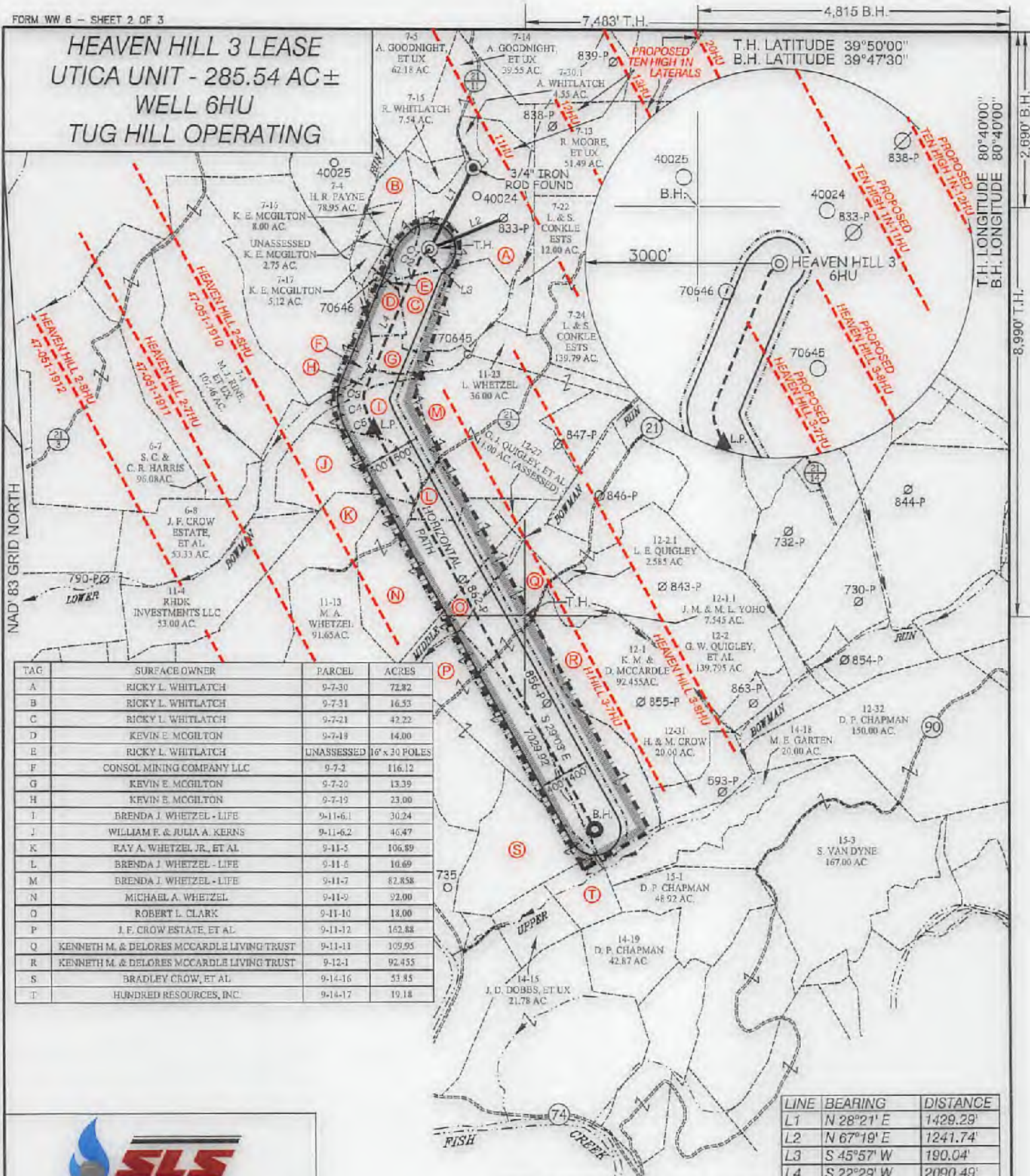
UTM (meters), NAD83, Zone 17:

NORTHING -4,406,565.23

EASTING -526,252.40

August 2017

**HEAVEN HILL 3 LEASE  
UTICA UNIT - 285.54 AC±  
WELL 6HU  
TUG HILL OPERATING**



TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-30	72.82
B	RICKY L. WHITLATCH	9-7-31	16.53
C	RICKY L. WHITLATCH	9-7-21	42.22
D	KEVIN E. MCGILTON	9-7-19	14.00
E	RICKY L. WHITLATCH	UNASSESSED 16' x 30' POLES	
F	CONSOL MINING COMPANY LLC	9-7-2	116.12
G	KEVIN E. MCGILTON	9-7-20	13.39
H	KEVIN E. MCGILTON	9-7-19	23.00
I	BRENDA J. WHETZEL - LIFE	9-11-6.1	30.24
J	WILLIAM F. & JULIA A. KERNS	9-11-6.2	46.47
K	RAY A. WHETZEL JR., ET AL	9-11-5	106.89
L	BRENDA J. WHETZEL - LIFE	9-11-6	10.69
M	BRENDA J. WHETZEL - LIFE	9-11-7	82.858
N	MICHAEL A. WHETZEL	9-11-9	92.00
O	ROBERT L. CLARK	9-11-10	18.00
P	J. F. CROW ESTATE, ET AL	9-11-12	162.88
Q	KENNETH M. & DELORES MCCARDLE LIVING TRUST	9-11-11	109.95
R	KENNETH M. & DELORES MCCARDLE LIVING TRUST	9-12-1	92.455
S	BRADLEY CROW, ET AL	9-14-16	53.85
T	HUNDRED RESOURCES, INC.	9-14-17	19.18

LINE	BEARING	DISTANCE
L1	N 28°21' E	1429.29'
L2	N 67°19' E	1241.74'
L3	S 45°57' W	190.04'
L4	S 22°29' W	2090.49'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	23.10'	112.75'	S 33°36' W	23.06'
C2	158.12'	1854.90'	S 24°28' W	158.07'
C3	71.33'	208.06'	S 07°43' W	70.98'
C4	239.26'	795.37'	S 13°09' E	238.36'
C5	261.93'	1764.93'	S 24°53' E	261.69'

**SLS**  
Land & Energy Development  
Solutions from the ground up.  
P.O. Box 150 • 12 Vanhook Drive • Glenville, WV 26031 • (304) 482-5634  
www.slsurveyors.com

P.S. 677  
*Gregory A. Smith*

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

NAD83 S.P.C.(FT)	N. 478,980.11	E. 1,633,277.01
NAD83 GEO.	LAT-(N) 39.809656	LONG-(W) 80.693304
NAD83 UTM (M)	N. 4,406,565.23	E. 526,252.40

**LANDING POINT**

NAD83 S.P.C.(FT)	N. 476,113.5	E. 1,632,417.3
NAD83 GEO.	LAT-(N) 39.601030	LONG-(W) 80.696233
NAD83 UTM (M)	N. 4,405,718.0	E. 528,004.6

**BOTTOM HOLE**

NAD83 S.P.C.(FT)	N. 469,967.5	E. 1,635,630.0
NAD83 GEO.	LAT-(N) 39.784283	LONG-(W) 80.6883799
NAD83 UTM (M)	N. 4,403,863.0	E. 527,075.6



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

**LEGEND**

- UNIT BOUNDARY
- LEASED TRACTS INSIDE
- UNIT BOUNDARY
- SURFACE LINE
- PROPOSED UTICA
- WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE PGS. 1 & 3)

SCALE 1" = 2000' FILE NO. 8654P6HUR3.dwg  
DATE AUGUST 25, 20 17  
REVISED 10-9-2017, 1-25-2018 & 1-29-2018  
OPERATORS WELL NO. HEAVEN HILL 3-6HU  
API WELL NO. 47-051-01968 H6A  
STATE COUNTY PERMIT

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

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

COUNTY NAME PERMIT

03/02/2018

**HEAVEN HILL 3 LEASE  
UTICA UNIT - 285.54 AC±  
WELL 6HU  
TUG HILL OPERATING**

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

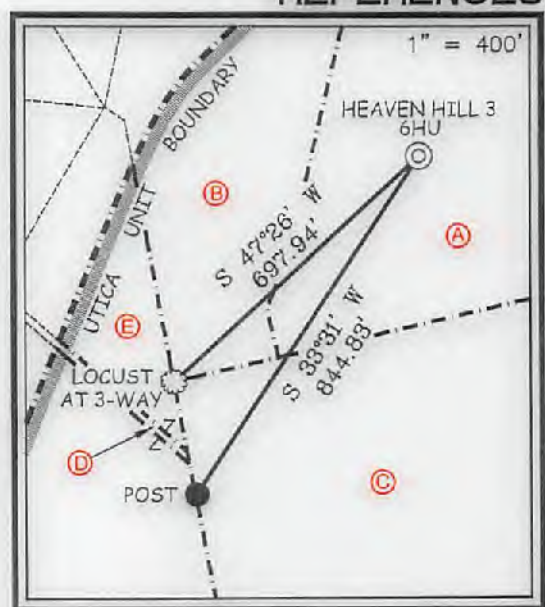
T.H. LONGITUDE 80°40'00"  
B.H. LONGITUDE 80°40'00"  
2,690' T.H.

No.	Lease Name or No.	Tag	Period	Oil & Gas Royalty Owners	Dead Book / Page
1	10*15557	A	9-7-20	RICKY L. WHITLATCH ET AL	760 / 226
2	10*15557	B	9-7-21	RICKY L. WHITLATCH ET AL	760 / 226
3	10*15557	C	9-7-21	RICKY L. WHITLATCH ET AL	760 / 226
4	10*16021	D	9-7-20	BRENDA HINTERMAN WILLIAMSON AND BRIAN K WILLIAMSON	325 / 468
5	10*16021	D	9-7-20	CONNA JEAN SNIDER AND DAVID SNIDER	325 / 468
6	10*16412	D	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	325 / 468
7	10*16412	D	9-7-20	GARY O HINTERMAN AND JUDY ANN HINTERMAN	325 / 468
8	10*15720	D	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	325 / 468
9	10*15696	D	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	325 / 468
10	10*16413	D	9-7-20	RONALD H EDGE JR	325 / 468
11	10*16028	D	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	325 / 468
12	10*16020	D	9-7-20	SHARON HINTERMAN MAY & DANIEL G MAY	325 / 468
13	10*16421	D	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	325 / 468
14	10*15667	D	9-7-20	KEVIN E MCGILTON ET LX	325 / 468
15	10*15557	E	9-7-20	RICKY L WHITLATCH ET AL	760 / 226
16	10*16471	F	9-7-21	CEX CO COMPANY LLC	325 / 468
17	10*16020	G	9-7-20	BRENDA HINTERMAN WILLIAMSON AND BRIAN K WILLIAMSON	325 / 468
18	10*16020	G	9-7-20	CONNA JEAN SNIDER AND DAVID SNIDER	325 / 468
19	10*16412	G	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	325 / 468
20	10*16020	G	9-7-20	GARY O HINTERMAN AND JUDY ANN HINTERMAN	325 / 468
21	10*15720	G	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	325 / 468
22	10*15696	G	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	325 / 468
23	10*16413	G	9-7-20	RONALD H EDGE JR	325 / 468
24	10*16028	H	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	325 / 468
25	10*16020	I	9-7-20	SHARON HINTERMAN MAY & DANIEL G MAY	325 / 468
26	10*15721	J	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	325 / 468
27	10*15667	J	9-7-20	KEVIN E MCGILTON ET LX	325 / 468
28	10*15667	H	9-7-20	KEVIN E MCGILTON ET LX	325 / 468
29	10*47051.256.1	I	9-11-5.1	BRENDA J WHITZEL	881 / 145
30	10*47051.256.3	I	9-11-5.1	BRENDA J WHITZEL	881 / 145
31	10*47051.256.2	I	9-11-5.1	CAROL JEAN ANDERSON	870 / 299
32	10*47051.256.4	I	9-11-5.1	GLEN A BONAR	861 / 312
33	10*47051.256.5	I	9-11-5.1	JERRY W ZIEN AND KATHLEEN EZIEN	882 / 300
34	10*15660	I	9-11-5.1	EMMA ANDERSON	861 / 300
35	10*15670	I	9-11-5.2	GARY M BONAR AND ELLIN L BONAR	861 / 300
36	10*15670	I	9-11-5.2	JUDALENE K COLLINS	861 / 300
37	10*15672	I	9-11-5.2	NADIM HURP	861 / 300
38	10*47051.256.3	J	9-11-5.2	BRENDA J WHITZEL	881 / 145
39	10*47051.256.2	J	9-11-5.2	CAROL JEAN ANDERSON	870 / 299
40	10*47051.256.4	J	9-11-5.2	GLEN A BONAR	861 / 312
41	10*47051.256.5	J	9-11-5.2	JERRY W ZIEN AND KATHLEEN EZIEN	882 / 300
42	10*15660	J	9-11-5.2	EMMA ANDERSON	861 / 300
43	10*15670	J	9-11-5.2	GARY M BONAR AND ELLIN L BONAR	861 / 300
44	10*15672	J	9-11-5.2	NADIM HURP	861 / 300
45	10*15671	J	9-11-5.2	JUDALENE K COLLINS	861 / 300
46	10*15672	J	9-11-5.2	NADIM HURP	861 / 300
47	10*15591	K	9-11-5	VIKIE MASON	861 / 300
48	10*15580	K	9-11-5	SHARON L WHEZEL	861 / 300
49	10*15580	K	9-11-5	SARBYA SOUTH	861 / 300
50	10*15587	K	9-11-5	ROBERT L WHEZEL	861 / 300
51	10*15588	K	9-11-5	RAY A WHEZEL JR	861 / 300
52	10*15580	K	9-11-5	MIKEL WHEZEL	861 / 300
53	10*47051.108.1	K	9-11-5	MIKEL WHEZEL	861 / 300
54	10*47051.108.5	K	9-11-5	BRENDA J WHITZEL	881 / 145
55	10*47051.256.1	L	9-11-6	BRENDA J WHITZEL	881 / 145
56	10*47051.256.3	L	9-11-6	BRENDA J WHITZEL	881 / 145
57	10*47051.256.2	L	9-11-6	CAROL JEAN ANDERSON	870 / 299
58	10*47051.256.4	L	9-11-6	GLEN A BONAR	861 / 312
59	10*47051.256.5	L	9-11-6	JERRY W ZIEN AND KATHLEEN EZIEN	882 / 300
60	10*15660	L	9-11-6	EMMA ANDERSON	861 / 300
61	10*15670	L	9-11-6	GARY M BONAR AND ELLIN L BONAR	861 / 300
62	10*15671	L	9-11-6	JUDALENE K COLLINS	861 / 300
63	10*15672	L	9-11-6	NADIM HURP	861 / 300
64	10*47051.256.22	M	9-11-7	REVERLY HOPSON	925 / 501
65	10*47051.256.1	M	9-11-7	BRENDA J WHITZEL	881 / 145
66	10*15786	M	9-11-7	BRUCE D SCHUBB	925 / 501
67	10*16247	M	9-11-7	CAROL RIGGLE PARSELY AND JAMES DENNIS PARSELY	925 / 501
68	10*47051.256.34	M	9-11-7	CATHERINE BONAR PETTIT BULL	925 / 501
69	10*47051.256.56	M	9-11-7	CHARLOTTE B JUMBLEI	925 / 501
70	10*47051.256.15	M	9-11-7	CHARLOTTE B JUMBLEI	925 / 501
71	10*17230	M	9-11-7	CHAGGA F HARRIS AND JAMES HARRIS	925 / 501
72	10*17237	M	9-11-7	DEBRA METCALF	925 / 501
73	10*17415	M	9-11-7	DILLON FITZSWANBER	925 / 501
74	10*16115	M	9-11-7	EARL W HARRIS	925 / 501
75	10*47051.256.30	M	9-11-7	GRACE LAURA BONAR	925 / 501
76	10*47051.256.14	M	9-11-7	HUGH B BLIZZARD	925 / 501
77	10*47051.256.21	M	9-11-7	JACK L MASON AND JEAN M MASON	925 / 501
78	10*47051.256.30	M	9-11-7	JEFFREY THOMAS PILES AND TERESA A PILES	925 / 501
79	10*47051.256.41	M	9-11-7	JOHN L MASON	925 / 501
80	10*47051.256.18	M	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	925 / 501

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)  
 NAD'83 S.P.C.(FT) N. 478,880.11 E. 1,633,277.01  
 NAD'83 GEO. LAT-(N) 39.808656 LONG-(W) 80.699304  
 NAD'83 UTM (M) N. 4,405,565.23 E. 526,252.40  
**LANDING POINT**  
 NAD'83 S.P.C.(FT) N. 476,119.5 E. 1,632,417.3  
 NAD'83 GEO. LAT-(N) 39.801030 LONG-(W) 80.698233  
 NAD'83 UTM (M) N. 4,405,718.0 E. 526,004.6  
**BOTTOM HOLE**  
 NAD'83 S.P.C.(FT) N. 489,967.5 E. 1,635,830.0  
 NAD'83 GEO. LAT-(N) 39.784283 LONG-(W) 80.683799  
 NAD'83 UTM (M) N. 4,403,863.0 E. 527,075.6

T.H.

**REFERENCES**



**NOTES ON SURVEY**

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

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www.slsurveys.com

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



P.S. Gregory A. Smith  
677

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
 DATE AUGUST 25, 20 17  
 REVISED 10-9-2017, 1-25-2018 & 1-29-2018  
 OPERATORS WELL NO. HEAVEN HILL 3-6HU  
 API WELL NO. 47-051-01968  
 STATE NC COUNTY WV PERMIT MLA

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P6HUR3.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE: OIL  GAS  INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW   
 LOCATION: GROUND = 1,338.50' PROPOSED = 1,326.35' WATERSHED LOWER BOWMAN RUN OF FISH CREEK (HUC 10)  
 DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'  
 SURFACE OWNER RICKY L. WHITLATCH ACREAGE 72.82±  
 ROYALTY OWNER RICKY L. WHITLATCH, ET AL - SEE PAGES 1 & 3 ACREAGE 72.82±  
 PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER   
 PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION POINT PLEASANT  
 ESTIMATED DEPTH TVD: 11,829' / TMD: 19,376'

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

COUNTY MEADE PERMIT MLA

03/02/2018

HEAVEN HILL 3 LEASE  
 UTICA UNIT - 285.54 AC ±  
 WELL 6HU  
 TUG HILL OPERATING



No.	Lease Name or No.	Tag	Parcel	Oil & Gas Revesty Owner - Continued	Deed Book/Page
81	10*47051.256.7	M	9-11-7	MARILYN SUE BUMER	905 25
82	10*47051.256.17	M	9-11-7	MAXINE G JOHNSON	904 457
83	10*47051.256.39	M	9-11-7	MICHAEL DAVID PYES AND CYNTHIA A PYES	902 207
84	10*47051.256.8	M	9-11-7	PAMELA ANN MASON	905 31
85	10*47051.256.12	M	9-11-7	ROBERT L EGGAN	905 156
86	10*47051.256.13	M	9-11-7	STEVEN S SCHWAB	905 38
87	10*15511	M	9-11-7	TOMMY RONAR AND TANVA S RONAR	905 33
88	10*47051.256.9	M	9-11-7	WANDA MASON SUNSHINE	905 41
89	10*47051.256.13	M	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	885 51
90	10*47051.256.1	N	9-11-9	MICHAELA WHITZEL	685 280
91	10*15511	D	9-11-10	ROBERT L CLARK	718 376
92	10*15511	F	9-11-12	DAVID E CROW	718 334
93	10*15511	F	9-11-12	DESIREE CROW	718 343
94	10*15511	F	9-11-12	DIANNE EGGELNER & GARY GELMAN	718 326
95	10*15511	F	9-11-12	ELAINE PHELPS ET VIR	718 376
96	10*15511	F	9-11-12	FRANCIS COFFEY	718 342
97	10*15511	F	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	875 148
98	10*47051.256.2	F	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	775 502
99	10*15511	F	9-11-12	JOHN CROW	718 332
100	10*15511	F	9-11-12	KAY KEYS	718 336
101	10*15511	F	9-11-12	L PAUL CROW	865 580
102	10*47051.256.3	F	9-11-12	LLOYD GRABER	718 354
103	10*15511	F	9-11-12	ROSE MARIE KILGUSZEWSKI	725 382
104	10*15511	F	9-11-12	TIMOTHY CROW	816 499
105	10*15511	Q	9-11-11	KENNETH M MCCANDLE ET UX REV LT	904 617
106	10*15511	R	9-11-11	EMILY ANN KUCIPROD	905 356
107	10*15511	R	9-11-11	THOMAS MICHAEL WALLACE	902 220
108	10*47051.256.3	R	9-11-11	THOMAS S RIGGS III	901 273
109	10*47051.256.2	R	9-11-11	WILLIAM MARTIN RIGGS ANRELA RAE MOORE	901 285
110	10*15511	S	9-14-16	JOANN MENCER	901 211
111	10*15511	S	9-14-16	HARRIET J ANDERSON	901 285
112	10*15511	S	9-14-16	BETTY LLOGES	901 20
113	10*15511	S	9-14-16	DONALD & SANDRA GRIZEL	901 108
114	10*15511	S	9-14-16	WILLIAM McDONALD AND SHIRLEY McDONALD	911 260
115	10*15511	S	9-14-16	CURTIS W WEST JR AND DIANE WEST	901 226
116	10*15511	S	9-14-16	NANCY FFEY & STEPHEN M FFEY	901 272
117	10*15511	S	9-14-16	WALTER LEE SAMPSON AND BARBARA LINDSEY	901 274
118	10*15511	S	9-14-16	OSCAR L MENCER	901 238
119	10*15511	S	9-14-16	JOHN RANDOLPH L GORBY	901 275
120	10*15511	S	9-14-16	JOSEPH JEREMY PALMER	901 642
121	10*15511	S	9-14-16	LOHREN GOODY	901 29
122	10*15511	S	9-14-16	CORNYE WICKLE	910 13
123	10*15511	S	9-14-16	LARRY JACK EMERY	901 65
124	10*15511	S	9-14-16	DEBORAH KAY COOLEY AND ROBERT T REEK	901 35
125	10*15511	S	9-14-16	PATRICIA D BABLAND JOHN J BABL	901 235
126	10*15511	S	9-14-16	MARILYN E MESSOR	901 76
127	10*15511	S	9-14-16	WILLIAM EGGAN AND CHRISTY E EGGAN	901 61
128	10*15511	S	9-14-16	KATHRYN M WATKINS	901 240
129	10*15511	S	9-14-16	ARLENA B HOPKIN AND QUAY ALLEN HOPKIN	901 274
130	10*15511	S	9-14-16	JANICE BROOKHOVER	901 186
131	10*15511	S	9-14-16	KATHLEEN J FRANCIS	901 77
132	10*15511	S	9-14-16	JANETTE M HEATH	901 23
133	10*15511	S	9-14-16	WILLIAM MASON JR AND ROBIN MASON	901 50
134	10*15511	S	9-14-16	BRUCE LYNN JOHNSON AND KIMBERLY A JOHNSON	901 236
135	10*15511	S	9-14-16	ALICE MARLENE PERSINGER	901 57
136	10*15511	S	9-14-16	LARRY W JOHNSON	901 245
137	10*15511	S	9-14-16	JAMES EARLAND MARGARET L SUBERT	901 219
138	10*15511	S	9-14-16	CARDOLYN SUE FRANKLIN AND RAYMOND EUGENE FRANKLIN	901 641
139	10*15511	S	9-14-16	LLOYD GREG SUBERT	901 256
140	10*15511	S	9-14-16	LINDA ELINE AND RICHARD LEROY LITTELL	901 386
141	10*15511	S	9-14-16	BARBARA KAYSBERT	901 334
142	10*15511	S	9-14-16	MARY LOUISE GORBY	901 257
143	10*15511	S	9-14-16	ROGER ALAN AND CYNTHIA L JOHNSON	901 228
144	10*15511	S	9-14-16	BRENDA K YORD	901 19
145	10*15511	S	9-14-16	CHARLES LEROY AND MARTHA G LEACH	901 260
146	10*15511	S	9-14-16	JACK L JR AND VIRGINIA L CROW	901 279
147	10*15511	S	9-14-16	APRIL M WIFE	901 248
148	10*15511	S	9-14-16	VICKIE LYNN RAPE AND JOHN EDWARD RAPE	901 281
149	10*15511	S	9-14-16	ROGER L WEST	901 277
150	10*15511	S	9-14-16	LEONA ANN BURT	901 216
151	10*15511	S	9-14-16	SCOTT BRADLEY AND SHERRY ANN GRIMM	901 242
152	10*15511	S	9-14-16	NANCY C AND CARLE KESSELING	901 22
153	10*15511	S	9-14-16	KAREN LOUISE AND ROGER L DUNHAM	901 254
154	10*15511	S	9-14-16	TH EXPLORATION LLC	901 224
155	10*15511	S	9-14-16	SHEILA RAMONA CROW	901 76
156	10*15511	S	9-14-16	MILA VIRGINIA AND FREDERICK EUGENE STREIGHT	901 251
157	10*15511	S	9-14-16	SILVIA DEE WOOD	901 210
158	10*15511	S	9-14-16	JERRY HOWELL	901 39
159	10*15511	S	9-14-16	DONALD PAUL CROW AND CRYSTAL LYNN CROW	901 281
160	10*15511	S	9-14-16	DEBORAH A WALLACE	901 63
161	10*15511	S	9-14-16	MACK A AND CAROLA CROW	901 204
162	10*15511	S	9-14-16	DONN E JASON HEDGEPETH AND KAREN L HEDGEPETH	901 42
163	10*15511	S	9-14-16	NILA F HEDGEPETH	901 45
164	10*15511	S	9-14-16	EBBA HOWARD COCHRAN	901 27
165	10*15511	S	9-14-16	DEBORAH BRINE PIERCE AND BARRETT LEE PIERCE	901 34
166	10*15511	S	9-14-16	CINDY AND DARNELL L FUKS	901 268
167	10*15511	S	9-14-16	HELEN WARRIEN AND DAVID F MCCRAY	901 147
168	10*15511	S	9-14-16	MEIRA PLEFF RUDOLPHSON	901 39
169	10*15511	S	9-14-16	HAROLD R CROW AND CONNIE SUE CROW	901 210
170	10*15511	S	9-14-16	BETTY L HUFF AND DILLIE C HUGGINS	901 55
171	10*15511	S	9-14-16	BEVERLY KATHRYN GORDOARD	901 39
172	10*15511	S	9-14-16	CHARLES M TURNER AND BESSIE M TURNER	901 281
173	10*15511	S	9-14-16	JUDY DESS GLOVER	901 117
174	10*15511	S	9-14-16	PAT DARRELL TURNER AND INA DENISE TURNER	901 130
175	10*15511	S	9-14-16	RONALD EDWARD WATSON AND DIANA L WATSON	901 182
176	10*15511	S	9-14-16	JOHN M HAUGHT JR AND CHERYL A HAUGHT	901 68
177	10*15511	S	9-14-16	DIANA LYNN BURKARDT	901 187
178	10*15511	S	9-14-16	JAMES B AND PENNY G CROW	901 185
179	10*15511	S	9-14-16	BRIAN K CROW	901 114
180	10*15511	S	9-14-16	GRIVILLA LAND SAURY L SUFF	904 512
181	10*15511	S	9-14-16	WILLIAM JAMES HEDGEPETH AND ERIN ELIZABETH HEDGEPETH	904 509
182	10*15511	S	9-14-16	LUTY A AND CLYDE E ELLITY	904 567
183	10*15511	S	9-14-16	LILLIE L GARY	904 564
184	10*15511	S	9-14-16	DAVID LEE AND ANNE F BAKER	904 576
185	10*15511	S	9-14-16	CONNIE SUE DOUGLAS AND BONNIE J DOUGLAS	904 573
186	10*15511	S	9-14-16	THOMAS LEE AND CLARA J HAUGHT	901 288
187	10*15511	S	9-14-16	TERRY LEE PERRY AND STEPHANIE LYNN PETT	901 834
188	10*15511	S	9-14-16	DEBRA J & DARRELL R LANCASTER	901 215
189	10*15511	S	9-14-16	PANSY MASTON AND BERN LASTON	901 63
190	10*15511	S	9-14-16	GREGORY S CROW	901 213
191	10*15511	S	9-14-16	SUSAN LYNN SEVANT	901 632
192	10*15511	S	9-14-16	BOCKY LEE AND TAMMY J WATSON	901 320
193	10*15511	S	9-14-16	SANDRA RAY RICHMOND	901 25
194	10*15511	T	9-14-17	STONE HILL MINERALS HOLDINGS LLC	

FILE NO. 8654P6HUR3.dwg

DATE AUGUST 25, 2017

REVISED 10-9-2017, 1-25-2018 & 1-29-2018

OPERATORS WELL NO. HEAVEN HILL 3-6HU

API WELL NO. 47-051-01968  
 STATE COUNTY PERMIT



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



P.S. 677

*Gregory A. Smith*

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

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

COUNTY NAME PERMIT

03/02/2018

**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
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\*See attached sheets

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

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

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

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

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

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 6HU

81-0968

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15557	A	9-7-30	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	B	9-7-31	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	C	9-7-21	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*16289	D	9-7-18	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A
10*16051	D	9-7-18	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A
10*16412	D	9-7-18	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A
10*16053	D	9-7-18	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A
10*15720	D	9-7-18	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A
10*15698	D	9-7-18	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A
10*16413	D	9-7-18	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A
10*16028	D	9-7-18	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A
10*16020	D	9-7-18	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A
10*15721	D	9-7-18	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A
10*15667	D	9-7-18	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*15557	E	9-7-Unassessed Parcel	RICKY L WHITLATCH ET AL	CHEVRON USA INC	1/8+	780 226	N/A	N/A	Chevron to Tug Hill: 36/148
10*16471	F	9-7-2	CNX GAS COMPANY LLC	TH EXPLORATION LLC	1/8+	905 155	N/A	N/A	N/A
10*16289	G	9-7-20	BRENDA HINERMAN WILLIAMSON AND BRIAN K WILLIAMSON	TH EXPLORATION LLC	1/8+	905 468	N/A	N/A	N/A
10*16051	G	9-7-20	DONNA JEAN SNIDER AND DAVID SNIDER	TH EXPLORATION LLC	1/8+	905 462	N/A	N/A	N/A
10*16412	G	9-7-20	ELIZABETH ANN BLAZER AND PAUL R BLAZER	TH EXPLORATION LLC	1/8+	905 452	N/A	N/A	N/A
10*16053	G	9-7-20	GARY D HINERMAN AND JUDY ANN HINERMAN	TH EXPLORATION LLC	1/8+	905 466	N/A	N/A	N/A
10*15720	G	9-7-20	KAREN L GREATHOUSE AND FLOYD GREATHOUSE	TH EXPLORATION LLC	1/8+	905 458	N/A	N/A	N/A
10*15698	G	9-7-20	ROBERT A EDGE AND SHERRIE N EDGE	TH EXPLORATION LLC	1/8+	900 363	N/A	N/A	N/A
10*16413	G	9-7-20	RONALD H EDGE JR	TH EXPLORATION LLC	1/8+	905 454	N/A	N/A	N/A
10*16028	G	9-7-20	ROSEMARY PARKINS AND STEPHEN PARKINS	TH EXPLORATION LLC	1/8+	905 460	N/A	N/A	N/A
10*16020	G	9-7-20	SHARON HINERMAN MAY & DANIEL G MAY	TH EXPLORATION LLC	1/8+	905 464	N/A	N/A	N/A
10*15721	G	9-7-20	TINA L EDGE MONTI AND THOMAS MONTI	TH EXPLORATION LLC	1/8+	905 456	N/A	N/A	N/A
10*15667	G	9-7-20	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*15667	H	9-7-19	KEVIN E MCGILTON ET UX	CHEVRON USA INC	1/8+	850 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.1	I	9-11-6.1	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*47051.256.3	I	9-11-6.1	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A
10*47051.256.2	I	9-11-6.1	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A
10*47051.256.4	I	9-11-6.1	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A
10*47051.256.5	I	9-11-6.1	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A
10*15669	I	9-11-6.1	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	I	9-11-6.1	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	I	9-11-6.1	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	I	9-11-6.1	NAOMI HUPP	CHEVRON USA INC	1/8+	861 604	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.3	J	9-11-6.2	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A
10*47051.256.2	J	9-11-6.2	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A
10*47051.256.4	J	9-11-6.2	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A
10*47051.256.5	J	9-11-6.2	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A
10*15560	J	9-11-6.2	WILLIAM F KERNS ET UX	CHESAPEAKE APPALACHIA LLC	1/8+	677 561	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15669	J	9-11-6.2	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	J	9-11-6.2	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	J	9-11-6.2	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	J	9-11-6.2	NAOMI HUPP	CHEVRON USA INC	1/8+	861 604	N/A	N/A	Chevron to Tug Hill: 36/148
10*15584	K	9-11-5	VICKIE MASON	CHEVRON U.S.A. INC.	1/8+	686 239	N/A	N/A	Chevron to Tug Hill: 36/148

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 6HU

SI-01968

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15585	K	9-11-5	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	687 147	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15586	K	9-11-5	MARY A SOUTH	CHEVRON U.S.A. INC.	1/8+	690 615	N/A	N/A	Chevron to Tug Hill: 36/148
10*15587	K	9-11-5	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	690 559	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15588	K	9-11-5	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	693 571	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15589	K	9-11-5	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	693 576	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*47051.108.1	K	9-11-5	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A
10*47051.108.5	K	9-11-5	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885 55	N/A	N/A	N/A
10*47051.256.1	L	9-11-6	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*47051.256.3	L	9-11-6	BRENDA S DYKHOUSE	TH EXPLORATION LLC	1/8+	881 148	N/A	N/A	N/A
10*47051.256.2	L	9-11-6	CAROL JEAN ANDERSON	TH EXPLORATION LLC	1/8+	879 299	N/A	N/A	N/A
10*47051.256.4	L	9-11-6	GLEN A BONAR	TH EXPLORATION LLC	1/8+	881 151	N/A	N/A	N/A
10*47051.256.5	L	9-11-6	JERRY W ZIEN AND KATHLEEN E ZIEN	TH EXPLORATION LLC	1/8+	882 530	N/A	N/A	N/A
10*15669	L	9-11-6	EMMA ANDERSON	CHEVRON USA INC	1/8+	861 586	N/A	N/A	Chevron to Tug Hill: 36/148
10*15670	L	9-11-6	GARY M BONAR AND ELLEN L BONAR	CHEVRON USA INC	1/8+	861 577	N/A	N/A	Chevron to Tug Hill: 36/148
10*15671	L	9-11-6	JUDALENE K COLLUMS	CHEVRON USA INC	1/8+	861 571	N/A	N/A	Chevron to Tug Hill: 36/148
10*15672	L	9-11-6	NAOMI HUPP	CHEVRON USA INC	1/8+	861 604	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.256.22	M	9-11-7	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A
10*47051.256.1	M	9-11-7	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*15746	M	9-11-7	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A
10*16247	M	9-11-7	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A
10*47051.256.24	M	9-11-7	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A
10*47051.256.16	M	9-11-7	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A
10*47051.256.15	M	9-11-7	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A
10*17506	M	9-11-7	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A
10*17507	M	9-11-7	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A
10*17415	M	9-11-7	DILLON PITSENBARGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A
10*16115	M	9-11-7	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A
10*47051.256.10	M	9-11-7	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A
10*47051.256.14	M	9-11-7	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A
10*47051.256.21	M	9-11-7	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A
10*47051.256.20	M	9-11-7	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A
10*47051.256.11	M	9-11-7	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A
10*47051.256.18	M	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A
10*47051.256.7	M	9-11-7	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A
10*47051.256.17	M	9-11-7	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A
10*47051.256.19	M	9-11-7	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A
10*47051.256.8	M	9-11-7	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A
10*47051.256.23	M	9-11-7	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A
10*47051.256.12	M	9-11-7	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A
10*16021	M	9-11-7	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A
10*47051.256.9	M	9-11-7	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A
10*47051.256.13	M	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A
10*47051.108.1	N	9-11-9	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A
10*15582	O	9-11-10	ROBERT L CLARK	CHESAPEAKE APPALACHIA LLC	1/8+	685 239	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15511	P	9-11-12	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 26/269	Chevron to Tug Hill: 36/148
10*15515	P	9-11-12	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15517	P	9-11-12	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148



Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15510	P	9-11-12	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15512	P	9-11-12	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15518	P	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*47051.123.2	P	9-11-12	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A
10*15519	P	9-11-12	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15513	P	9-11-12	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15514	P	9-11-12	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*47051.123.1	P	9-11-12	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*15516	P	9-11-12	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15520	P	9-11-12	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15559	Q	9-11-11	KENNETH M MCCARDLE ET UX REV LT	CHEVRON USA INC	1/8+	816 499	N/A	N/A	Chevron to Tug Hill: 36/148
10*16244	R	9-12-1	EMILY ANN NICIFOROS	TH EXPLORATION LLC	1/8+	924 617	N/A	N/A	N/A
10*16149	R	9-12-1	THOMAS MICHAEL WALLACE	TH EXPLORATION LLC	1/8+	924 610	N/A	N/A	N/A
10*47051.333.1	R	9-12-1	THOMAS S RIGGS III	TH EXPLORATION LLC	1/8+	904 556	N/A	N/A	N/A
10*47051.333.2	R	9-12-1	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	TH EXPLORATION LLC	1/8+	907 220	N/A	N/A	N/A
10*15458	S	9-14-16	JOANN MERCER	TH EXPLORATION LLC	1/8+	921 273	N/A	N/A	N/A
10*15469	S	9-14-16	HARRIET J ANDERSON	TH EXPLORATION LLC	1/8+	920 11	N/A	N/A	N/A
10*15470	S	9-14-16	BETTY L LOGES	TH EXPLORATION LLC	1/8+	921 286	N/A	N/A	N/A
10*15472	S	9-14-16	DONALD & SANDRA GRIZZEL	TH EXPLORATION LLC	1/8+	920 70	N/A	N/A	N/A
10*15473	S	9-14-16	WILLIAM F MCDONALD AND SHIRLEY MCDONALD	TH EXPLORATION LLC	1/8+	921 198	N/A	N/A	N/A
10*15476	S	9-14-16	CURITS W WEST JR AND DIANE WEST	TH EXPLORATION LLC	1/8+	921 263	N/A	N/A	N/A
10*15488	S	9-14-16	NANCY F FYE & STEPHEN M FYE	TH EXPLORATION LLC	1/8+	921 226	N/A	N/A	N/A
10*15495	S	9-14-16	WALTER LEE BARNHART AND BARBARA L HEATH	TH EXPLORATION LLC	1/8+	921 222	N/A	N/A	N/A
10*15694	S	9-14-16	DEBORAH L MERCER	TH EXPLORATION LLC	1/8+	921 271	N/A	N/A	N/A
10*15695	S	9-14-16	JOHN R AND LOIS L GORBY	TH EXPLORATION LLC	1/8+	929 259	N/A	N/A	N/A
10*15696	S	9-14-16	JOSEPH JEREMY PALMER	TH EXPLORATION LLC	1/8+	921 275	N/A	N/A	N/A
10*15741	S	9-14-16	LOHRN S GORBY	TH EXPLORATION LLC	1/8+	929 641	N/A	N/A	N/A
10*16152	S	9-14-16	CONNIE HECKLE	TH EXPLORATION LLC	1/8+	920 29	N/A	N/A	N/A
10*16153	S	9-14-16	LARRY JACK EMERY	TH EXPLORATION LLC	1/8+	920 13	N/A	N/A	N/A
10*16186	S	9-14-16	DEBORAH KAY COOLEY AND ROBERT T BECK	TH EXPLORATION LLC	1/8+	920 65	N/A	N/A	N/A
10*16187	S	9-14-16	PATRICIA D BABL AND JOHN J BABL	TH EXPLORATION LLC	1/8+	920 31	N/A	N/A	N/A
10*16191	S	9-14-16	MADLYN E MOSSOR	TH EXPLORATION LLC	1/8+	920 76	N/A	N/A	N/A
10*16403	S	9-14-16	WILLIAM C EDGAR AND CHRISTY E EDGAR	TH EXPLORATION LLC	1/8+	920 61	N/A	N/A	N/A
10*16404	S	9-14-16	KATHRYN M WHIPKEY	TH EXPLORATION LLC	1/8+	921 194	N/A	N/A	N/A
10*16406	S	9-14-16	ARLENA B HORNER AND QUAY ALLEN HORNER	TH EXPLORATION LLC	1/8+	921 240	N/A	N/A	N/A
10*16407	S	9-14-16	JANICE F BROOKOVER	TH EXPLORATION LLC	1/8+	920 74	N/A	N/A	N/A
10*16408	S	9-14-16	KATHLEEN I FRANCIS	TH EXPLORATION LLC	1/8+	921 196	N/A	N/A	N/A
10*16409	S	9-14-16	JEANETTE M HEATH	TH EXPLORATION LLC	1/8+	920 72	N/A	N/A	N/A
10*16425	S	9-14-16	WILLIAM A MASON JR AND ROBIN MASON	TH EXPLORATION LLC	1/8+	920 25	N/A	N/A	N/A
10*16428	S	9-14-16	BRUCE LYNN JOHNSON AND KIMBERLY A JOHNSON	TH EXPLORATION LLC	1/8+	920 50	N/A	N/A	N/A
10*16438	S	9-14-16	ALICE MARLENE PERSINGER	TH EXPLORATION LLC	1/8+	921 236	N/A	N/A	N/A
10*16468	S	9-14-16	LARRY W JOHNSON	TH EXPLORATION LLC	1/8+	920 57	N/A	N/A	N/A
10*16469	S	9-14-16	JAMES EARL AND MARGARET L SIBURT	TH EXPLORATION LLC	1/8+	921 245	N/A	N/A	N/A
10*16470	S	9-14-16	CAROLYN SUE FRANKLIN AND RAYMOND EUGENE FRANKLIN	TH EXPLORATION LLC	1/8+	921 219	N/A	N/A	N/A
10*16472	S	9-14-16	JUDY DELORIS SIBURT	TH EXPLORATION LLC	1/8+	929 643	N/A	N/A	N/A
10*16473	S	9-14-16	LINDA ELAINE AND RICHARD LEROY LITTELL	TH EXPLORATION LLC	1/8+	929 256	N/A	N/A	N/A
10*16474	S	9-14-16	BARBARA KAY SIBURT	TH EXPLORATION LLC	1/8+	921 266	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 6HU

81-01968

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16475	S	9-14-16	MARY LOUISE GORBY	TH EXPLORATION LLC	1/8+	921 234	N/A	N/A	N/A
10*16476	S	9-14-16	ROGER ALLAN AND CYNTHIA L JOHNSON	TH EXPLORATION LLC	1/8+	921 257	N/A	N/A	N/A
10*16477	S	9-14-16	BRENDA K YOHO	TH EXPLORATION LLC	1/8+	921 228	N/A	N/A	N/A
10*16550	S	9-14-16	CHARLES LEROY AND MARTHA G LEACH	TH EXPLORATION LLC	1/8+	920 19	N/A	N/A	N/A
10*16551	S	9-14-16	JACK L JR & VIRGINIA L CROW	TH EXPLORATION LLC	1/8+	921 260	N/A	N/A	N/A
10*16867	S	9-14-16	APRIL M WEED	TH EXPLORATION LLC	1/8+	921 279	N/A	N/A	N/A
10*16883	S	9-14-16	VICKIE LYNN PAPE AND JOHN EDWARD PAPE	TH EXPLORATION LLC	1/8+	921 248	N/A	N/A	N/A
10*16884	S	9-14-16	DELORES A AND LEONARD B BOWERS	TH EXPLORATION LLC	1/8+	921 281	N/A	N/A	N/A
10*16916	S	9-14-16	ROGER LEE WEST	TH EXPLORATION LLC	1/8+	921 277	N/A	N/A	N/A
10*16971	S	9-14-16	LEONA M SIBURT	TH EXPLORATION LLC	1/8+	921 238	N/A	N/A	N/A
10*16972	S	9-14-16	SCOTT BRADLEY AND SHERRY ANN GRIMM	TH EXPLORATION LLC	1/8+	921 242	N/A	N/A	N/A
10*16973	S	9-14-16	NANCY C AND CARL E KESSELRING	TH EXPLORATION LLC	1/8+	920 22	N/A	N/A	N/A
10*17358	S	9-14-16	KAREN LOUISE AND ROGER L DUNHAM	TH EXPLORATION LLC	1/8+	921 254	N/A	N/A	N/A
10*17359	S	9-14-16	TH EXPLORATION LLC	TH EXPLORATION LLC	1/8+	921 224	N/A	N/A	N/A
10*17361	S	9-14-16	SHEILA RAMONA CROW	TH EXPLORATION LLC	1/8+	920 78	N/A	N/A	N/A
10*17362	S	9-14-16	NILA VIRGINIA AND FREDERICK EUGENE STREIGHT	TH EXPLORATION LLC	1/8+	921 251	N/A	N/A	N/A
10*17366	S	9-14-16	SYLVIA DEE WOOD	TH EXPLORATION, LLC	1/8+	921 230	N/A	N/A	N/A
10*17367	S	9-14-16	JERRY HOWELL	TH EXPLORATION LLC	1/8+	920 37	N/A	N/A	N/A
10*17368	S	9-14-16	DONALD PAUL CROW AND CRYSTAL LYNN CROW	TH EXPLORATION LLC	1/8+	921 201	N/A	N/A	N/A
10*17369	S	9-14-16	DELORES A WALLACE	TH EXPLORATION LLC	1/8+	920 63	N/A	N/A	N/A
10*17371	S	9-14-16	MACK A AND CAROL A CROW	TH EXPLORATION LLC	1/8+	921 204	N/A	N/A	N/A
10*17372	S	9-14-16	DONNIE JASON HEDGEPEETH AND KAREN L HEDGEPEETH	TH EXPLORATION LLC	1/8+	920 42	N/A	N/A	N/A
10*17373	S	9-14-16	NILA F HEDGEPEETH	TH EXPLORATION LLC	1/8+	920 45	N/A	N/A	N/A
10*17374	S	9-14-16	EZRA HOWARD COCHRAN	TH EXPLORATION LLC	1/8+	920 27	N/A	N/A	N/A
10*17380	S	9-14-16	DEBORAH IRENE PIERCE AND BARRETT LEE PIERCE	TH EXPLORATION LLC	1/8+	920 34	N/A	N/A	N/A
10*17381	S	9-14-16	CINDY J AND DARNELL L FULKS	TH EXPLORATION LLC	1/8+	921 268	N/A	N/A	N/A
10*17382	S	9-14-16	HELEN MARIE AND DAVID E MCCRAY	TH EXPLORATION LLC	1/8+	920 147	N/A	N/A	N/A
10*17389	S	9-14-16	MELBA EILEEN HUDDLESTUN	TH EXPLORATION, LLC	1/8+	920 53	N/A	N/A	N/A
10*17390	S	9-14-16	HAROLD B CROW AND CONNIE SUE CROW	TH EXPLORATION LLC	1/8+	921 207	N/A	N/A	N/A
10*17391	S	9-14-16	BETTY L HUFF AND OLLIE C HUGGINS	TH EXPLORATION, LLC	1/8+	921 210	N/A	N/A	N/A
10*17392	S	9-14-16	BEVERLY KATHRYN GODDARD	TH EXPLORATION, LLC	1/8+	920 55	N/A	N/A	N/A
10*17393	S	9-14-16	CHARLIE M TURNER AND BESSIE M TURNER	TH EXPLORATION LLC	1/8+	920 39	N/A	N/A	N/A
10*17394	S	9-14-16	JUDY LOUISE GLOVER	TH EXPLORATION LLC	1/8+	921 232	N/A	N/A	N/A
10*17397	S	9-14-16	PAT DARRELL TURNER AND TINA DENISE TURNER	TH EXPLORATION LLC	1/8+	925 117	N/A	N/A	N/A
10*17399	S	9-14-16	RONALD EDWARD WATSON AND DIANA L WATSON	TH EXPLORATION LLC	1/8+	925 120	N/A	N/A	N/A
10*17401	S	9-14-16	JOHN M HAUGHT JR AND CHERYL A HAUGHT	TH EXPLORATION LLC	1/8+	925 182	N/A	N/A	N/A
10*17402	S	9-14-16	DIANA LYNN BUMGARDNER	TH EXPLORATION LLC	1/8+	920 68	N/A	N/A	N/A
10*17403	S	9-14-16	JAMES B AND PENNY G CROW	TH EXPLORATION, LLC	1/8+	925 187	N/A	N/A	N/A
10*17404	S	9-14-16	BRIAN K CROW	TH EXPLORATION LLC	1/8+	925 185	N/A	N/A	N/A
10*17405	S	9-14-16	ORVELLA L AND LARRY L NEFF	TH EXPLORATION, LLC	1/8+	925 114	N/A	N/A	N/A
10*17408	S	9-14-16	WILLIAM JAMES HEDGEPEETH AND ERIN ELIZABETH HEDGEPEETH	TH EXPLORATION LLC	1/8+	924 572	N/A	N/A	N/A
10*17409	S	9-14-16	JUDY A AND CLYDE E ELLZEY	TH EXPLORATION LLC	1/8+	924 569	N/A	N/A	N/A
10*17410	S	9-14-16	LILLIE L GAREY	TH EXPLORATION, LLC	1/8+	924 567	N/A	N/A	N/A
10*17420	S	9-14-16	DAVID LEE AND ANN F BAKER	TH EXPLORATION LLC	1/8+	924 564	N/A	N/A	N/A
10*17490	S	9-14-16	CONNIE SUE DOUGLAS AND RONNIE J DOUGLAS	TH EXPLORATION LLC	1/8+	924 578	N/A	N/A	N/A
10*17491	S	9-14-16	THOMAS LEE AND CLARA J HAUGHT	TH EXPLORATION LLC	1/8+	924 575	N/A	N/A	N/A
10*17598	S	9-14-16	TERRY LEE PETTIT AND STEPHANIE LYNN PETIT	TH EXPLORATION LLC	1/8+	921 288	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 6HU

51-01968

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment
10*17710	S	9-14-16	DEBRA J & DARRELL R LANCASTER	TH EXPLORATION, LLC	1/8+	929	634	N/A	N/A	N/A
10*17811	S	9-14-16	PANSY M ASTON AND ELMER L ASTON	TH EXPLORATION LLC	1/8+	921	216	N/A	N/A	N/A
10*17821	S	9-14-16	GREGORY S CROW	TH EXPLORATION LLC	1/8+	929	639	N/A	N/A	N/A
10*17902	S	9-14-16	SUSAN LYNN SEDGMER	TH EXPLORATION LLC	1/8+	920	59	N/A	N/A	N/A
10*17904	S	9-14-16	RICKY LEE AND TAMMY J WATSON	TH EXPLORATION LLC	1/8+	921	213	N/A	N/A	N/A
10*17958	S	9-14-16	SANDRA KAY RICHMOND	TH EXPLORATION LLC	1/8+	929	632	N/A	N/A	N/A
10*17929	T	9-14-17	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	921	320	N/A	N/A	N/A





**COPY**

AFFIDAVIT

STATE OF TEXAS §  
§ SS  
COUNTY OF TARRANT §

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

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

FURTHER, AFFIANT SAITH NOT.

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

David D. Kalish  
Affiant: David D. Kalish

JURAT

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

STATE OF TEXAS §  
§ SS  
COUNTY OF TARRANT §

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

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

My Commission Expires: 10-05-2020  
Signature/Notary Public: Robin Bock  
Name/Notary Public (Print): Robin Bock



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WV Department of Environmental Protection



Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

5. Counterparts; Recordation. This Assignment may be executed in any number of counterparts, each of which will be deemed an original instrument, but all of which shall collectively constitute one and the same instrument; provided that none of the parties will be bound to this Assignment unless and until all parties have executed a counterpart. For recording purposes, the signature and/or acknowledgment pages from multiple counterparts may be combined with one or more other counterparts without affecting the effect or validity of this Assignment. Assignee will be responsible for recording this Assignment in the appropriate public record, and will bear any costs associated with such recording.

6. Drafting. Preparation of this Assignment has been a joint effort of the parties and the resulting Assignment must not be construed more severely against any of the parties than against any other.

7. Incorporation. This Assignment is subject to and expressly incorporates the terms of the Acreage Trade Agreement by and between Assignor and Assignee. The Acreage Trade Agreement will govern to the extent of any conflict between the terms of this Assignment and the Acreage Trade Agreement.

(The remainder of this page intentionally left blank, signature pages to follow)

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Environmental Protection

03/02/2018



IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

ASSIGNOR:

CHEVRON U.S.A. INC.

By: Marc Tate  
Name: Marc Tate  
Title: Attorney-In-Fact

ASSIGNEE:

TH EXPLORATION, LLC

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

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Office of Oil and Gas  
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WV Department of  
Environmental Protection

03/02/2018

IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

ASSIGNOR:

CHEVRON U.S.A. INC.

By: \_\_\_\_\_  
Name: Marc Tate  
Title: Attorney-In-Fact

ASSIGNEE:

TH EXPLORATION, LLC

By: David D. Kalish  
Name: David D. Kalish  
Title: VP-Land

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WV Department of  
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03/02/2018

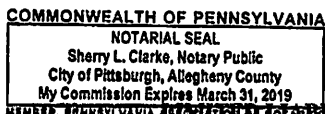
CORPORATE ACKNOWLEDGEMENT

STATE/Commonwealth of PENNSYLVANIA )  
 ) SS:  
COUNTY OF ALLEGHENY )

On this the 16th day of May, 2016, before me, SHERRY L. CLARKE the undersigned authority, personally appeared Marc Tate, who acknowledged himself to be the Attorney-In-Fact of CHEVRON U.S.A. INC., a Pennsylvania corporation, and that he as such Attorney-In-Fact, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Attorney-In-Fact.

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

MY COMMISSION EXPIRES: March 31, 2019



Sherry L. Clarke  
Notary Public

LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

STATE/Commonwealth of \_\_\_\_\_ )  
 ) SS:  
COUNTY OF \_\_\_\_\_ )

On this the \_\_\_\_\_ day of \_\_\_\_\_, 2016, before me, \_\_\_\_\_ the undersigned authority, personally appeared \_\_\_\_\_, who acknowledged himself to be a \_\_\_\_\_, a limited liability company and that he as such \_\_\_\_\_, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as \_\_\_\_\_.

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

MY COMMISSION EXPIRES:

\_\_\_\_\_  
Notary Public

Prepared by:

CHEVRON U.S.A. INC.  
Attn: Land Department  
700 Cherrington Parkway,  
Coraopolis, PA 15108

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WV Department of  
Environmental Protection

CORPORATE ACKNOWLEDGEMENT

STATE/Commonwealth of PENNSYLVANIA )  
 ) SS:  
COUNTY OF ALLEGHENY )

On this the \_\_\_ day of \_\_\_\_\_, 2016, before me, \_\_\_\_\_  
the undersigned authority, personally appeared Marc Tate, who acknowledged himself to  
be the Attorney-In-Fact of CHEVRON U.S.A. INC., a Pennsylvania corporation, and that he as such  
Attorney-In-Fact, being authorized to do so, executed the foregoing instrument for the purposes therein  
contained by signing the name of the corporation by himself as Attorney-In-Fact.

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

MY COMMISSION EXPIRES:

\_\_\_\_\_  
Notary Public

LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

STATE/Commonwealth of Texas )  
 ) SS:  
COUNTY OF Tarrant )

On this the 17<sup>th</sup> day of May, 2016, before me,  
Jennifer Mchugh the undersigned authority, personally appeared David A. Kalish, who  
acknowledged himself to be Vice President Land of TH Exploration, a limited liability  
company and that he as such Vice President Land, being authorized to do so, executed the  
foregoing instrument for the purposes therein contained by signing the name of the limited liability  
company by himself as Vice President Land.

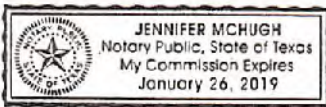
IN WITNESS WHEREOF, I hereto set my hand and official seal.

MY COMMISSION EXPIRES: 1-26-2019

Jennifer Mchugh  
Notary Public

Prepared by:

CHEVRON U.S.A. INC.  
Attn: Land Department  
700 Cherrington Parkway,  
Coraopolis, PA 15108



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WV Department of  
Environmental Protection

03/02/2018



June 28, 2017

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

RE: Heaven Hill 3-6HU

Subject: Marshall County Route 21/9 and 21 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 21/9 and 21 in the area reflected on the Heaven Hill 3-6HU 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](mailto:amiller@tug-hilop.com).

Sincerely,

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

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

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SEP - 6 2017  
WV Department of  
Environmental Protection

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

Date of Notice Certification: 08/01/2017

API No. 47- 051 01968  
Operator's Well No. Heaven Hill 3-6HU  
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>526,252.40</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,565.23</u>
District:	<u>Meade</u>	Public Road Access:	<u>Yeater Lane CR 21/11</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Ricky L. Whitlatch</u>	
Watershed:	<u>Lower Bowman Run of Fish Creek (HUC 10)</u>			

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p><b>OOG OFFICE USE ONLY</b></p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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**Required Attachments:**

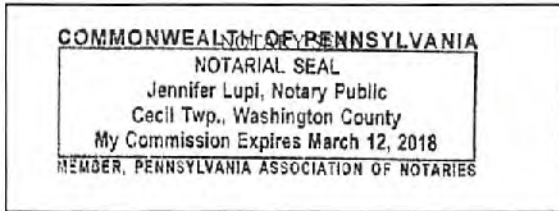
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

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**Certification of Notice is hereby given:**

THEREFORE, I Amy L. Miller *Amy 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 Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller</u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>304-376-01111</u>	Email:	<u>amiller@tug-hillop.com</u>



Subscribed and sworn before me this 18<sup>th</sup> day of Sept 2017.  
*Jennifer Lupi* Notary Public  
 My Commission Expires March 12, 2018

**Oil and Gas Privacy Notice:**

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

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

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

**Date of Notice:** 8/31/2017 **Date Permit Application Filed:** 9/1/2017

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

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

Name: None  
Address: \_\_\_\_\_

SURFACE OWNER(s) (Road and/or Other Disturbance)

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

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

SURFACE OWNER(s) (Impoundments or Pits)

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 OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: \*See supplement page 1A attached  
Address: \_\_\_\_\_

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: None  
Address: \_\_\_\_\_

\*Please attach additional forms if necessary

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**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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://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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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 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

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

**Time Limits and Methods for Filing Comments.**

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

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

**Comment Requirements**

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

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

**Permit Denial or Condition**

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

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

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

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

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WW-6A  
(8-13)

API NO. 47- 051 - 01968  
OPERATOR WELL NO. Heaven Hill 3-6HU  
Well Pad Name: Heaven Hill 3

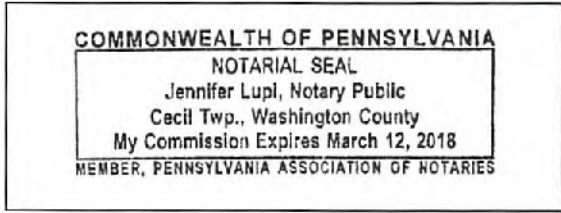
**Notice is hereby given by:**

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 [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).



Subscribed and sworn before me this 31<sup>st</sup> day of Aug, 2017.  
Jennifer Lupi Notary Public  
My Commission Expires March 12, 2018

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

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

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

Well: Heaven Hill 3 - 6HU  
 District: Meade (House #'s 1 & 2)  
 State: WV

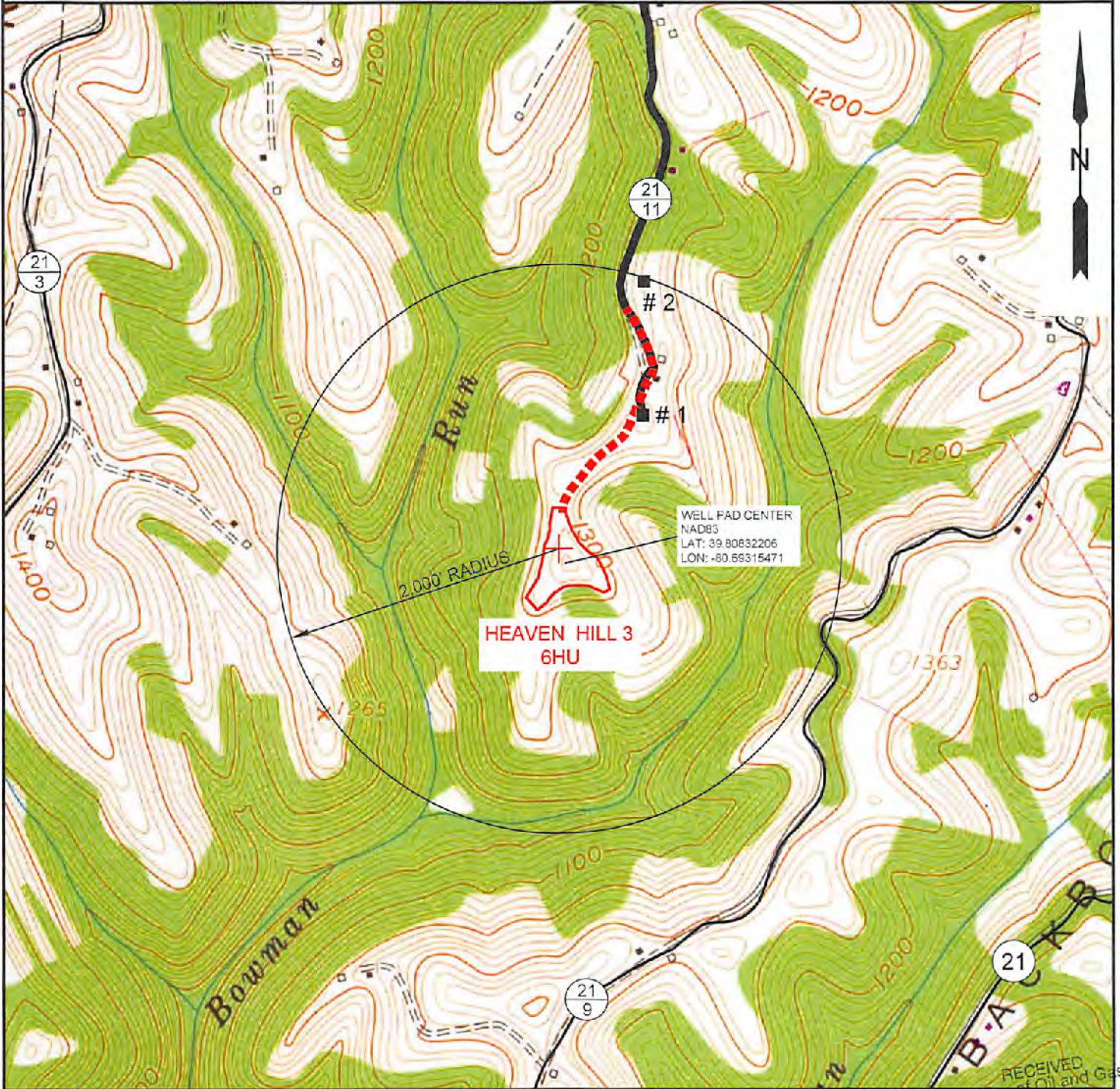
There are two (2) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<b>House 1</b> TM 7 Pcl. 30 Ricky L. Whitlatch Phone: 304-843-1168 <b>Physical Address:</b> 1044 Yeater Ln. Glen Easton, WV 26039 <b>Tax Address:</b> Same	<b>House 2</b> TM 7 Pcl. 30.1 Andrew Corey Whitlatch Phone: 304-845-9605 <b>Physical Address:</b> 942 Yeater Ln. Glen Easton, WV 26039 <b>Tax Address:</b> Same
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# PROPOSED HEAVEN HILL 3 - 6HU



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

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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	08/25/2017	1" = 1000'

**TUG HILL**  
OPERATING

03/02/2018

**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:** December 5, 2016      **Date of Planned Entry:** December 16, 2016

**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. Whillatch  
Address: 1044 Yeater Lane  
Glen Easton, WV 26039

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

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

COAL OWNER OR LESSEE

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

MINERAL OWNER(S)

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

\*please attach additional forms if necessary

**Notice is hereby given:**

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

State: West Virginia  
County: Marshall  
District: Meade  
Quadrangle: Glen Easton 7.5'

Approx. Latitude & Longitude: Lat: 39.6083194, Long: -80.6931660  
Public Road Access: Yeater Lane (CO. RL 21/11)  
Watershed: HUC-10 Fish Creek  
Generally used farm name: Ricky L. Whillatch

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 57<sup>th</sup> 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](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

**Notice is hereby given by:**

Well Operator: Tug Hill Operating, LLC  
Telephone: 724-0749-8388  
Email: jwhite@tug-hill-op.com

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

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**Oil and Gas Privacy Notice:**

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

03/02/2018

Operator Well No. Heaven Hill Unit 3-6HU

**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:** 06/29/2017      **Date Permit Application Filed:** 07/07/2017

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>526,252.40</u>
County: <u>Marshall</u>		Northing: <u>4,406,565.23</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 57<sup>th</sup> Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting [www.dep.wv.gov/oil-and-gas/pages/default.aspx](http://www.dep.wv.gov/oil-and-gas/pages/default.aspx).

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

Address: 300 Southpointe Blvd, Southpointe Plaza II, Suite 200  
Canonsburg, PA 15317  
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

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

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51-01968

Operator Well No. Heaven Hill Unit 3-6HU

**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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03/02/2018

51-01968



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

**Division of Highways**

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

Jim Justice  
Governor

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

May 16, 2017

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

Subject: DOH Permit for the Heaven Hills Unit 3 Pad, Marshall County  
Heaven Hills Unit 3-6HU Well site

Dear Mr. Martin,

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

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

Very Truly Yours,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

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

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Environmental Protection  
03/02/2018



**PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION**

Well No. Heaven Hill 3-6HU

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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**WEST VIRGINIA COUNTY MAP**



**APPROVED  
WVDEP OOG**

7/10/2017

**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: 1-817-632-5400

**Exhibit A: Final Design: Issue for Permitting**



WV State Plane Coordinate System  
North Zone, NAD83  
Elevation Based on NAVD83  
Established for use with GPS  
and GIS Data Processing

**Property Owner Information - Heaven Hill 3 Site**

Owner	TM Parcel	High Parcel	Section	Block	County	AD (Acres)	Total Parcel
WV State	1001	1001	1001	1001	Marshall	2.13	2.13
WV State	1002	1002	1002	1002	Marshall	1.99	1.99
WV State	1003	1003	1003	1003	Marshall	1.99	1.99
WV State	1004	1004	1004	1004	Marshall	1.99	1.99
WV State	1005	1005	1005	1005	Marshall	1.99	1.99
WV State	1006	1006	1006	1006	Marshall	1.99	1.99
WV State	1007	1007	1007	1007	Marshall	1.99	1.99
WV State	1008	1008	1008	1008	Marshall	1.99	1.99
WV State	1009	1009	1009	1009	Marshall	1.99	1.99
WV State	1010	1010	1010	1010	Marshall	1.99	1.99
WV State	1011	1011	1011	1011	Marshall	1.99	1.99
WV State	1012	1012	1012	1012	Marshall	1.99	1.99
WV State	1013	1013	1013	1013	Marshall	1.99	1.99
WV State	1014	1014	1014	1014	Marshall	1.99	1.99
WV State	1015	1015	1015	1015	Marshall	1.99	1.99
WV State	1016	1016	1016	1016	Marshall	1.99	1.99
WV State	1017	1017	1017	1017	Marshall	1.99	1.99
WV State	1018	1018	1018	1018	Marshall	1.99	1.99
WV State	1019	1019	1019	1019	Marshall	1.99	1.99
WV State	1020	1020	1020	1020	Marshall	1.99	1.99
WV State	1021	1021	1021	1021	Marshall	1.99	1.99
WV State	1022	1022	1022	1022	Marshall	1.99	1.99
WV State	1023	1023	1023	1023	Marshall	1.99	1.99
WV State	1024	1024	1024	1024	Marshall	1.99	1.99
WV State	1025	1025	1025	1025	Marshall	1.99	1.99
WV State	1026	1026	1026	1026	Marshall	1.99	1.99
WV State	1027	1027	1027	1027	Marshall	1.99	1.99
WV State	1028	1028	1028	1028	Marshall	1.99	1.99
WV State	1029	1029	1029	1029	Marshall	1.99	1.99
WV State	1030	1030	1030	1030	Marshall	1.99	1.99
WV State	1031	1031	1031	1031	Marshall	1.99	1.99
WV State	1032	1032	1032	1032	Marshall	1.99	1.99
WV State	1033	1033	1033	1033	Marshall	1.99	1.99
WV State	1034	1034	1034	1034	Marshall	1.99	1.99
WV State	1035	1035	1035	1035	Marshall	1.99	1.99
WV State	1036	1036	1036	1036	Marshall	1.99	1.99
WV State	1037	1037	1037	1037	Marshall	1.99	1.99
WV State	1038	1038	1038	1038	Marshall	1.99	1.99
WV State	1039	1039	1039	1039	Marshall	1.99	1.99
WV State	1040	1040	1040	1040	Marshall	1.99	1.99
WV State	1041	1041	1041	1041	Marshall	1.99	1.99
WV State	1042	1042	1042	1042	Marshall	1.99	1.99
WV State	1043	1043	1043	1043	Marshall	1.99	1.99
WV State	1044	1044	1044	1044	Marshall	1.99	1.99
WV State	1045	1045	1045	1045	Marshall	1.99	1.99
WV State	1046	1046	1046	1046	Marshall	1.99	1.99
WV State	1047	1047	1047	1047	Marshall	1.99	1.99
WV State	1048	1048	1048	1048	Marshall	1.99	1.99
WV State	1049	1049	1049	1049	Marshall	1.99	1.99
WV State	1050	1050	1050	1050	Marshall	1.99	1.99
WV State	1051	1051	1051	1051	Marshall	1.99	1.99
WV State	1052	1052	1052	1052	Marshall	1.99	1.99
WV State	1053	1053	1053	1053	Marshall	1.99	1.99
WV State	1054	1054	1054	1054	Marshall	1.99	1.99
WV State	1055	1055	1055	1055	Marshall	1.99	1.99
WV State	1056	1056	1056	1056	Marshall	1.99	1.99
WV State	1057	1057	1057	1057	Marshall	1.99	1.99
WV State	1058	1058	1058	1058	Marshall	1.99	1.99
WV State	1059	1059	1059	1059	Marshall	1.99	1.99
WV State	1060	1060	1060	1060	Marshall	1.99	1.99
WV State	1061	1061	1061	1061	Marshall	1.99	1.99
WV State	1062	1062	1062	1062	Marshall	1.99	1.99
WV State	1063	1063	1063	1063	Marshall	1.99	1.99
WV State	1064	1064	1064	1064	Marshall	1.99	1.99
WV State	1065	1065	1065	1065	Marshall	1.99	1.99
WV State	1066	1066	1066	1066	Marshall	1.99	1.99
WV State	1067	1067	1067	1067	Marshall	1.99	1.99
WV State	1068	1068	1068	1068	Marshall	1.99	1.99
WV State	1069	1069	1069	1069	Marshall	1.99	1.99
WV State	1070	1070	1070	1070	Marshall	1.99	1.99
WV State	1071	1071	1071	1071	Marshall	1.99	1.99
WV State	1072	1072	1072	1072	Marshall	1.99	1.99
WV State	1073	1073	1073	1073	Marshall	1.99	1.99
WV State	1074	1074	1074	1074	Marshall	1.99	1.99
WV State	1075	1075	1075	1075	Marshall	1.99	1.99
WV State	1076	1076	1076	1076	Marshall	1.99	1.99
WV State	1077	1077	1077	1077	Marshall	1.99	1.99
WV State	1078	1078	1078	1078	Marshall	1.99	1.99
WV State	1079	1079	1079	1079	Marshall	1.99	1.99
WV State	1080	1080	1080	1080	Marshall	1.99	1.99
WV State	1081	1081	1081	1081	Marshall	1.99	1.99
WV State	1082	1082	1082	1082	Marshall	1.99	1.99
WV State	1083	1083	1083	1083	Marshall	1.99	1.99
WV State	1084	1084	1084	1084	Marshall	1.99	1.99
WV State	1085	1085	1085	1085	Marshall	1.99	1.99
WV State	1086	1086	1086	1086	Marshall	1.99	1.99
WV State	1087	1087	1087	1087	Marshall	1.99	1.99
WV State	1088	1088	1088	1088	Marshall	1.99	1.99
WV State	1089	1089	1089	1089	Marshall	1.99	1.99
WV State	1090	1090	1090	1090	Marshall	1.99	1.99
WV State	1091	1091	1091	1091	Marshall	1.99	1.99
WV State	1092	1092	1092	1092	Marshall	1.99	1.99
WV State	1093	1093	1093	1093	Marshall	1.99	1.99
WV State	1094	1094	1094	1094	Marshall	1.99	1.99
WV State	1095	1095	1095	1095	Marshall	1.99	1.99
WV State	1096	1096	1096	1096	Marshall	1.99	1.99
WV State	1097	1097	1097	1097	Marshall	1.99	1.99
WV State	1098	1098	1098	1098	Marshall	1.99	1.99
WV State	1099	1099	1099	1099	Marshall	1.99	1.99
WV State	1100	1100	1100	1100	Marshall	1.99	1.99
WV State	1101	1101	1101	1101	Marshall	1.99	1.99
WV State	1102	1102	1102	1102	Marshall	1.99	1.99
WV State	1103	1103	1103	1103	Marshall	1.99	1.99
WV State	1104	1104	1104	1104	Marshall	1.99	1.99
WV State	1105	1105	1105	1105	Marshall	1.99	1.99
WV State	1106	1106	1106	1106	Marshall	1.99	1.99
WV State	1107	1107	1107	1107	Marshall	1.99	1.99
WV State	1108	1108	1108	1108	Marshall	1.99	1.99
WV State	1109	1109	1109	1109	Marshall	1.99	1.99
WV State	1110	1110	1110	1110	Marshall	1.99	1.99
WV State	1111	1111	1111	1111	Marshall	1.99	1.99
WV State	1112	1112	1112	1112	Marshall	1.99	1.99
WV State	1113	1113	1113	1113	Marshall	1.99	1.99
WV State	1114	1114	1114	1114	Marshall	1.99	1.99
WV State	1115	1115	1115	1115	Marshall	1.99	1.99
WV State	1116	1116	1116	1116	Marshall	1.99	1.99
WV State	1117	1117	1117	1117	Marshall	1.99	1.99
WV State	1118	1118	1118	1118	Marshall	1.99	1.99
WV State	1119	1119	1119	1119	Marshall	1.99	1.99
WV State	1120	1120	1120	1120	Marshall	1.99	1.99
WV State	1121	1121	1121	1121	Marshall	1.99	1.99
WV State	1122	1122	1122	1122	Marshall	1.99	1.99
WV State	1123	1123	1123	1123	Marshall	1.99	1.99
WV State	1124	1124	1124	1124	Marshall	1.99	1.99
WV State	1125	1125	1125	1125	Marshall	1.99	1.99
WV State	1126	1126	1126	1126	Marshall	1.99	1.99
WV State	1127	1127	1127	1127	Marshall	1.99	1.99
WV State	1128	1128	1128	1128	Marshall	1.99	1.99
WV State	1129	1129	1129	1129	Marshall	1.99	1.99
WV State	1130	1130	1130	1130	Marshall	1.99	1.99
WV State	1131	1131	1131	1131	Marshall	1.99	1.99
WV State	1132	1132	1132	1132	Marshall	1.99	1.99
WV State	1133	1133	1133	1133	Marshall	1.99	1.99
WV State	1134	1134	1134	1134	Marshall	1.99	1.99
WV State	1135	1135	1135	1135	Marshall	1.99	1.99
WV State	1136	1136	1136	1136	Marshall	1.99	1.99
WV State	1137	1137	1137	1137	Marshall	1.99	1.99
WV State	1138	1138	1138	113			

