



west virginia department of environmental protection

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

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

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

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

FORT WORTH , TX 76107

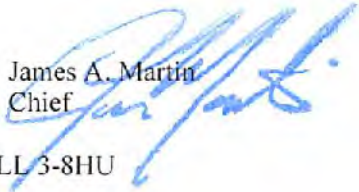
Re: Permit approval for HEAVEN HILL 3-8HU
47-051-01967-00-00

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 3-8HU
Farm Name: RICKY L WHITLATCH
U.S. WELL NUMBER: 47-051-01967-00-00
Horizontal 6A / New Drill
Date Issued: 2/27/2018

Promoting a healthy environment.

03/02/2018



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th 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 #47-051-01967

COMPANY: Tug Hill Operating, LLC

FARM: Tug Hill Operating, LLC Heaven Hill 3-8HU

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: none
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

PERMIT CONDITIONS

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

PERMIT CONDITIONS

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

CONDITIONS

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

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 3-8HU 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: 1341' 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

JW 1/26/18

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: 19,217' ✓

11) Proposed Horizontal Leg Length: 7,021' ✓

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 310' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	1,120'	1,120'	1794ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,875'	2,875'	2033ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	47#	10,515'	10,515'	3436ft^3(CTS)
Production	5 1/2"	NEW	HPP110	23#	19,217'	19,217'	4581ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,221'	
Liners							

Joe
1/26/18

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			

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 17,552,500 lb proppant and 271,374 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 other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

*Note: Attach additional sheets as needed.

WW6B Attachment to #24

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

51-01967



Tug Hill Operating, LLC Casing and Cement Program

Heaven Hill 3-8HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	1,120'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,875'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	10,515'	CTS
Production	5 1/2"	P110	8 1/2"	19,217'	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

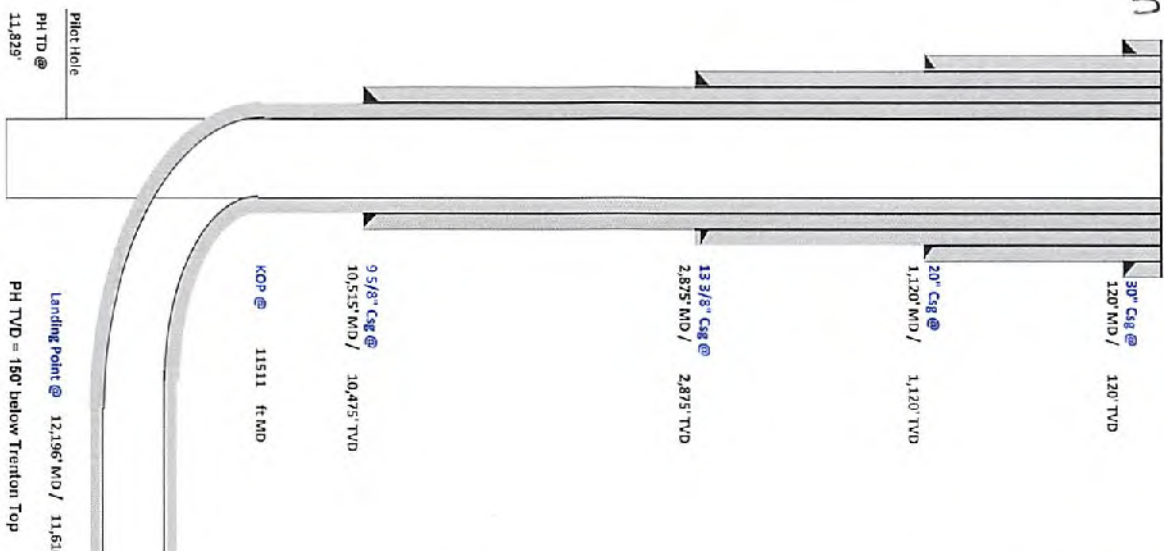
Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

03/02/2018

SI-01967



WELL NAME:	Heaven Hill 38HU	COUNTY:	Marshall
STATE:	West Virginia	GL Elev:	1,326'
DISTRICT:	Meade		
OP Elev:	1,326'		
TD:	19,217'		
TH Latitude:	39.80864044		
TH Longitude:	-80.6932176		
BL Latitude:	39.78768344		
BL Longitude:	-80.67616313		



Formation	Depth TVD
Designated Fresh Water	1,038'
Swatkin's Coal	946'
Friendship Coal	1,031'
Big Lime	2,060'
Berea	2,684'
Tully	6,617'
Marcellus	6,724'
Overlook	6,776'
Saltus	7,493'
Letcher	8,553'
Ursa	11,374'
Point Pleasant	11,545'
Landing Depth	11,616'
Tension	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'	8W	BW	Surface
Surface	26	20	1,120'	1,120'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,875'	2,875'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,515'	10,475'	47	HP110	Surface
Production	8 1/2	5 1/2	19,217'	11,738'	23	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Sacks	Class	Density	Fluid Type	Centralizer/foamer	
338	A	15.6	Air	None	
1,937	A	15.6	Air	3 Centralizers at equal distance	
2,202	A	15	Air	1 Centralizer every other ft	
2,796	A	14.5	Air	1 Centralizer every other ft	
3,937	A	15	Air / SOBMA	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to sic	

Handwritten signature/initials

Landing Point @ 12,196' MD / 11,616' TVD
 PH TD @ 13,829'

Lateral TD @ 19,217' H MD
 11,738' H TVD

Area of Review

Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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

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

Permit well - Heaven Hill 3-8HU

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	5737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101962	Tug Hill	5737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101963	Tug Hill	5737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101947	Tug Hill	5737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101948	Tug Hill	5737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705100846	Hope Natural Gas Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well	Well records are incomplete, plug date 12/12/1999. A field survey was conducted to locate this well and no evidence of this well was found.
4705100843	Hope Natural Gas Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well	Well records are incomplete, plug date 9/16/1999. A field survey was conducted to locate this well and this well was found plugged at the location shown on the well plat.
4705100595	Columbia Gas Transmission Corp.	2545	Gordon	Unknown	No. TVD depth of well is too shallow to be within Range of potential Fracture propagation from Marcellus wells	Well records are incomplete. A field survey was conducted to locate this well and no evidence of this well was found.
4705100847	McElroy Coal Co	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be a coal test bore well. Well has been plugged	Well records are incomplete, plug date 2/18/2000. 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

Select datatype: (Check All)

Enter Permit #: 00846

Location Production Plugging

Owner/Completion Stratigraphy Sample

Pay/ShowWater Logs Stem Hole Log

Well: County = 51 Permit = 00846

Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	10055	51	00846

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTM_E	UTM_N
4705100846	Marshall	00846	Meade	Green Station	Carlson	39.797352	-82.504325	5077284	4402395.9

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_COMPLETION	PROP_W
4705100846	12/12/1999		Plugging Completed	Allora Wark		M-03			Consolidation Coal Co	McElroy Coal Company	
4705100846				unlabeled					ESG	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
4705100846	12/12/1999	12/31/1999	1252	Ground Level				unclassified	unclassified	not available	unlabeled	unlabeled	
4705100846													

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

Plugging Information:

API	PLUG_DT	DEPTH_PBT
4705100846	12/12/1999	9

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00843
Get Data | Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Bm Hole Log

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WV Geological & Economic Survey **Well: County = 51 Permit = 00843** Report Time: Thursday, ...

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 70557 51 843

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100843	Marshall	843	Meigs	Glen Easton	Cameron	39.754245	-85.630386	627383.6	4405547.9

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_COMPLETION	PROP_VD	PH
4705100843	8/18/1999		Plugging	Completed	Naimi Guigley		M-57			Naimi Guigley	McElroy Cell Company	
4705100843	...	...	...	Unknown	Prsty Misa	H.A. Richmond		503		Naimi Guigley	McElroy Cell 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
4705100843	8/18/1999	8/3/1999	1320	Ground Level				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

Plugging Information:

API	PLG_DT	DEPTH_FBT
4705100843	8/18/1999	0

There is no Sample data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00595
Get Data | Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Bm Hole Log

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WV Geological & Economic Survey **Well: County = 51 Permit = 00595** Report Time: Thursday, June 06, 2017 5:15

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100595	Marshall	825	Meigs	Glen Easton	Cameron	39.732718	-85.676223	627317.0	4404469.4

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	PROP_VD	PROP_TRGY_FM
4705100595	8/19/2005		Completed	Riley Minor		1	1225			Manufacture Light & Heat Co.		
4705100595	...	...	...	Unknown	Rita M. Alvey et al		601220			Columbia Gas Transmission Corp.		

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_FTO	G_BEF
4705100595	8/19/2005	4/25/1905			Cameron/Garden	Garden		unclassified	unclassified	Q99	Unknown	NAG Green H	2145	2145		

There is no Pay data for this well

WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 00847
Get Data | Reset

Select datatypes: (Check All)
 Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/Show/Water Logs Bm Hole Log

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WV Geological & Economic Survey **Well: County = 51 Permit = 00847**

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 70554 51 847

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100847	Marshall	847	Meigs	Glen Easton	Cameron	39.759014	-85.617244	628766.4	4404496.8

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_VD	PROP_TRGT_FM
4705100847	2/18/2005		Plugging	Completed	Larry J. Witczel		m-95			McElroy Cell Company		
4705100847	...	...	...	Unknown	Prsty Misa	E.J. Jbara		1280		Manufacture Light & Heat Co.		

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_FTO	G_BEF
4705100847	2/18/2005	2/18/2005						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

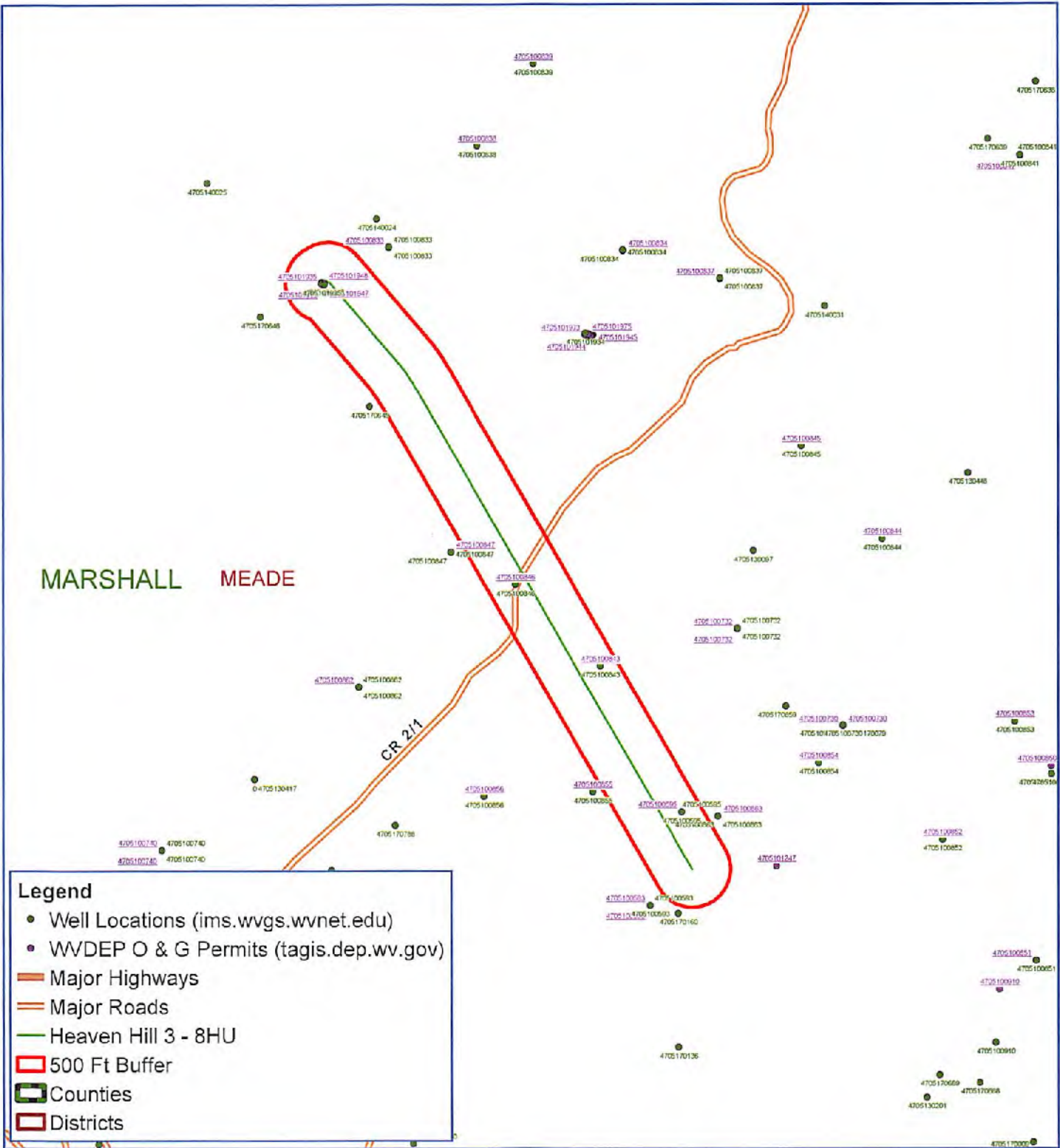
There is no Stratigraphy data for this well

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

Plugging Information:

API	PLG_DT	DEPTH_FBT
4705100847	2/18/2005	0

There is no Sample data for this well



Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 3 - 8HU
- 500 Ft Buffer
- Counties
- Districts



Heaven Hill 3-8HU Meade District Marshall County, WV



Map Created January 26, 2018
Map Current As Of January 26, 2018

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



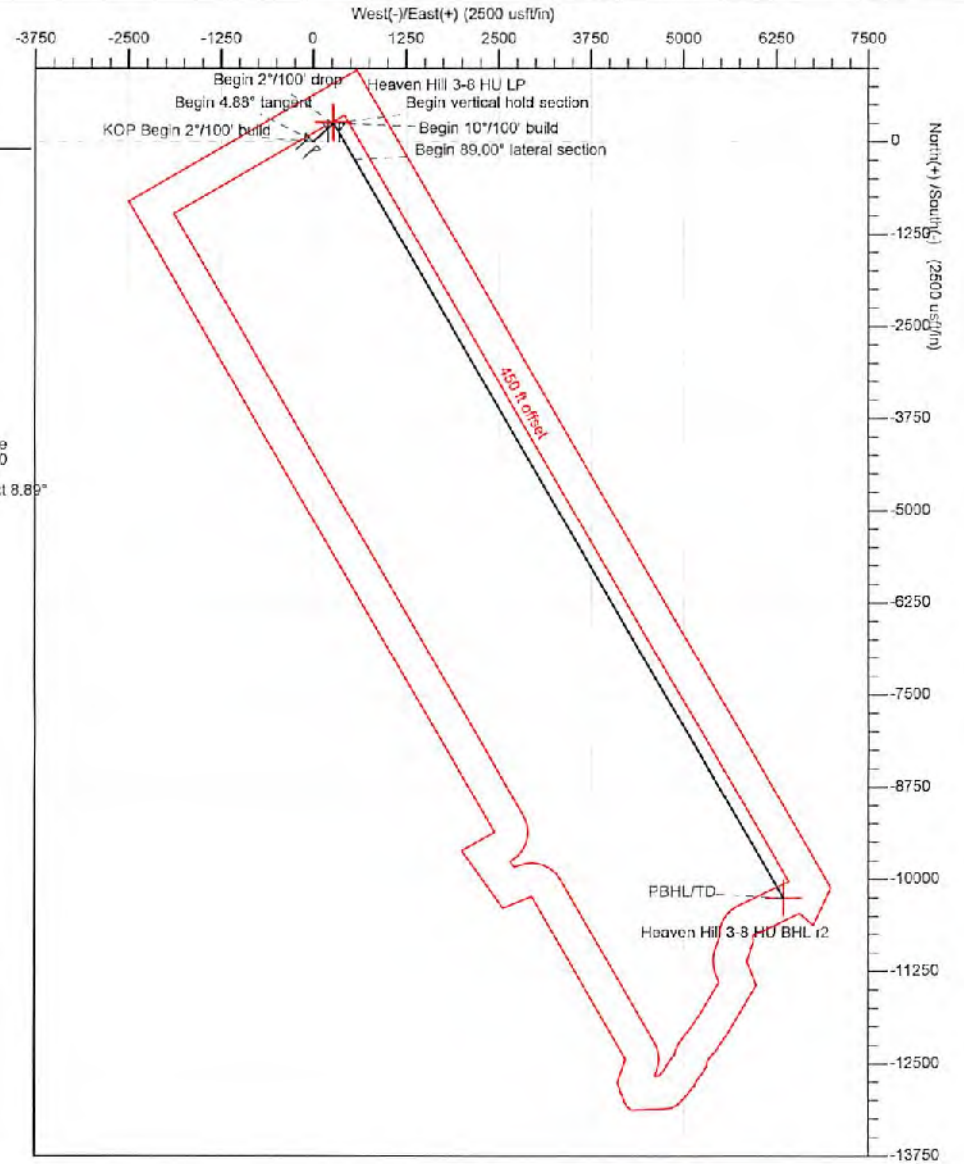
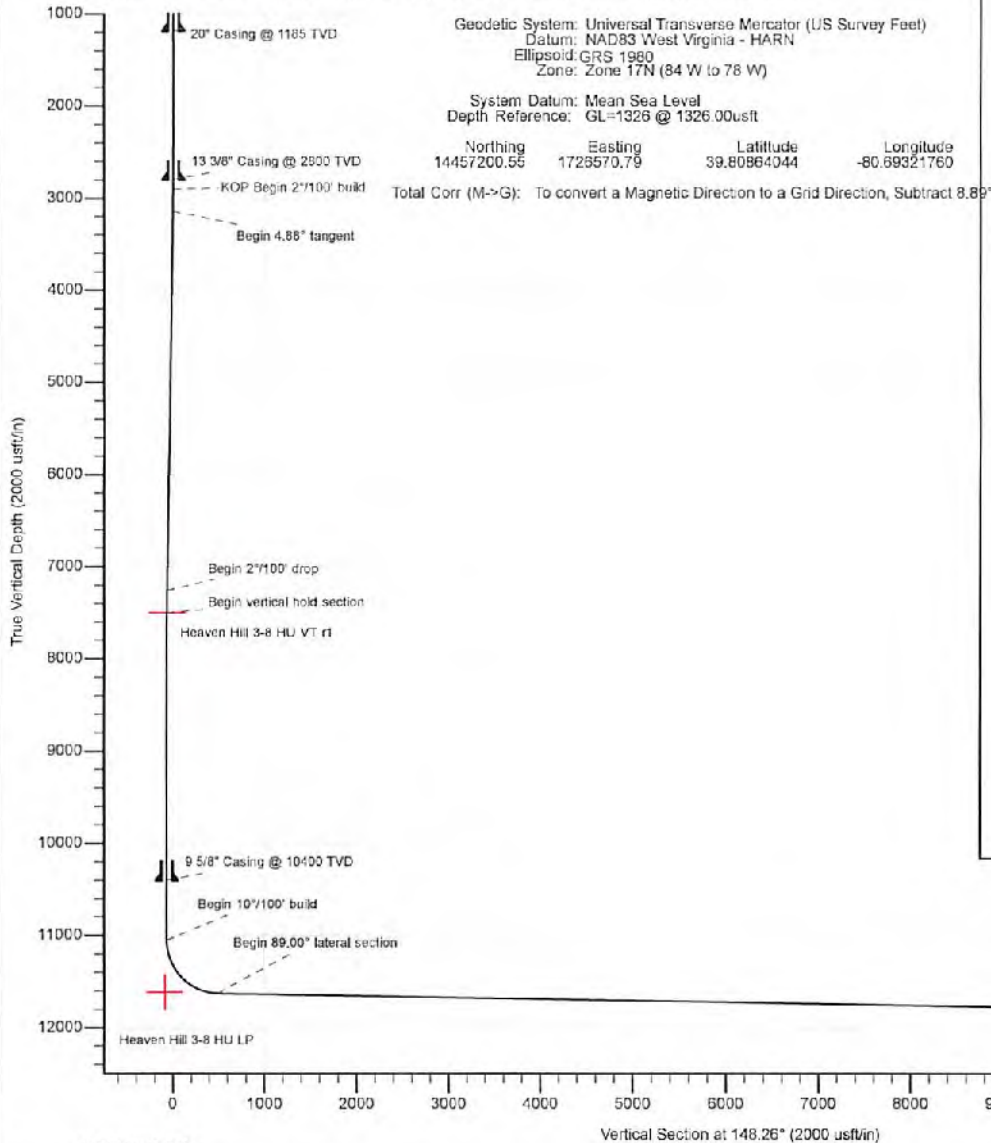


TUG HILL
OPERATING

Well: Heaven Hill 3-8 HU
Site: Heaven Hill 3
Project: Marshall County, West Virginia
Design: rev2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2900.00	0.00	0.00	2900.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	3143.98	4.88	47.85	3143.68	6.97	7.70	2.00	47.85	-1.88	Begin 4.88° tangent
4	7271.57	4.88	47.85	7256.32	242.57	268.00	0.00	0.00	-65.31	Begin 2°/100' drop
5	7515.55	0.00	0.00	7500.00	249.54	275.70	2.00	180.00	-67.19	Begin vertical hold section
6	11070.55	0.00	0.00	11055.00	249.54	275.70	0.00	0.00	-67.19	Begin 10°/100' build
7	11960.59	89.00	149.99	11627.87	-237.97	557.29	10.00	149.99	495.55	Begin 89.00° lateral section
8	23527.72	89.00	149.99	11829.00-10252.78	6341.93	0.00	0.00	2055.68		PBHL/TD



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



51-01967



Planning Report - Geographic

51-01967

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 HU	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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

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

Well	Heaven Hill 3-7 HU					
Well Position	+N/-S	0.00 usft	Northing:	14,457,203.32 usft	Latitude:	39.80654817
	+E/-W	0.00 usft	Easting:	1,726,558.60 usft	Longitude:	-80.69326096
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,326.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/3/2017	-8.69	67.00	52,225.10345639

Design	rev3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	154.06

Plan Survey Tool Program	Date	5/17/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	23,808.55 rev3 (Original Hole)	MWD MWD - Standard	

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	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,550.00	3.00	247.00	2,549.93	-1.53	-3.61	2.00	2.00	0.00	247.00	
8,508.23	3.00	247.00	8,500.00	-123.38	-290.65	0.00	0.00	0.00	0.00	
8,899.98	10.78	238.00	8,888.62	-146.84	-331.24	2.00	1.99	-2.30	-12.39	
11,104.61	10.78	238.00	11,054.32	-365.41	-681.07	0.00	0.00	0.00	0.00	
11,991.05	89.00	150.00	11,613.76	-905.41	-490.13	10.00	8.82	-9.93	-88.23	
23,808.55	89.00	150.00	11,820.00	-11,138.10	5,417.72	0.00	0.00	0.00	0.00	Heaven Hill 3-7 HU B

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 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	
0.00	0.00	0.00	0.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
100.00	0.00	0.00	100.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
200.00	0.00	0.00	200.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
300.00	0.00	0.00	300.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
400.00	0.00	0.00	400.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
500.00	0.00	0.00	500.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
600.00	0.00	0.00	600.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
700.00	0.00	0.00	700.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
800.00	0.00	0.00	800.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
900.00	0.00	0.00	900.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,457,203.32	1,726,558.60	39.80864817	-80.69326096	
KOP Begin 2°/100' build										
2,500.00	2.00	247.00	2,499.98	-0.68	-1.61	14,457,202.64	1,726,556.99	39.80864631	-80.69326569	
2,550.00	3.00	247.00	2,549.93	-1.53	-3.61	14,457,201.79	1,726,554.98	39.80864399	-80.69327385	
Begin 3.00° tangent										
2,600.00	3.00	247.00	2,599.86	-2.56	-6.02	14,457,200.77	1,726,552.58	39.80864121	-80.69328244	
2,700.00	3.00	247.00	2,699.73	-4.60	-10.84	14,457,198.72	1,726,547.76	39.80863564	-80.69329962	
2,800.00	3.00	247.00	2,799.59	-6.65	-15.66	14,457,196.68	1,726,542.94	39.80863007	-80.69331680	
2,900.00	3.00	247.00	2,899.45	-8.69	-20.48	14,457,194.63	1,726,538.12	39.80862450	-80.69333398	
3,000.00	3.00	247.00	2,999.31	-10.74	-25.29	14,457,192.59	1,726,533.31	39.80861893	-80.69335115	
3,100.00	3.00	247.00	3,099.18	-12.78	-30.11	14,457,190.54	1,726,528.49	39.80861336	-80.69336833	
3,200.00	3.00	247.00	3,199.04	-14.83	-34.93	14,457,188.50	1,726,523.67	39.80860778	-80.69338551	
3,300.00	3.00	247.00	3,298.90	-16.87	-39.75	14,457,186.45	1,726,518.85	39.80860221	-80.69340269	
3,400.00	3.00	247.00	3,398.77	-18.92	-44.56	14,457,184.41	1,726,514.04	39.80859664	-80.69341987	
3,500.00	3.00	247.00	3,498.63	-20.96	-49.38	14,457,182.36	1,726,509.22	39.80859107	-80.69343705	
3,600.00	3.00	247.00	3,598.49	-23.01	-54.20	14,457,180.32	1,726,504.40	39.80858550	-80.69345423	
3,700.00	3.00	247.00	3,698.36	-25.05	-59.02	14,457,178.27	1,726,499.58	39.80857993	-80.69347141	
3,800.00	3.00	247.00	3,798.22	-27.10	-63.83	14,457,176.23	1,726,494.77	39.80857436	-80.69348859	
3,900.00	3.00	247.00	3,898.08	-29.14	-68.65	14,457,174.18	1,726,489.95	39.80856879	-80.69350577	
4,000.00	3.00	247.00	3,997.94	-31.19	-73.47	14,457,172.14	1,726,485.13	39.80856322	-80.69352295	
4,100.00	3.00	247.00	4,097.81	-33.23	-78.29	14,457,170.09	1,726,480.31	39.80855765	-80.69354013	
4,200.00	3.00	247.00	4,197.67	-35.28	-83.10	14,457,168.05	1,726,475.50	39.80855208	-80.69355731	
4,300.00	3.00	247.00	4,297.53	-37.32	-87.92	14,457,166.00	1,726,470.68	39.80854651	-80.69357449	
4,400.00	3.00	247.00	4,397.40	-39.37	-92.74	14,457,163.96	1,726,465.86	39.80854094	-80.69359166	
4,500.00	3.00	247.00	4,497.26	-41.41	-97.56	14,457,161.91	1,726,461.04	39.80853537	-80.69360884	
4,600.00	3.00	247.00	4,597.12	-43.46	-102.37	14,457,159.87	1,726,456.23	39.80852980	-80.69362602	
4,700.00	3.00	247.00	4,696.99	-45.50	-107.19	14,457,157.82	1,726,451.41	39.80852423	-80.69364320	
4,800.00	3.00	247.00	4,796.85	-47.54	-112.01	14,457,155.78	1,726,446.59	39.80851866	-80.69366038	
4,900.00	3.00	247.00	4,896.71	-49.59	-116.83	14,457,153.73	1,726,441.77	39.80851308	-80.69367756	
5,000.00	3.00	247.00	4,996.57	-51.63	-121.64	14,457,151.69	1,726,436.95	39.80850751	-80.69369474	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 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
5,100.00	3.00	247.00	5,096.44	-53.68	-126.46	14,457,149.65	1,726,432.14	39.80850194	-80.69371192
5,200.00	3.00	247.00	5,196.30	-55.72	-131.28	14,457,147.60	1,726,427.32	39.80849637	-80.69372910
5,300.00	3.00	247.00	5,296.16	-57.77	-136.10	14,457,145.56	1,726,422.50	39.80849080	-80.69374628
5,400.00	3.00	247.00	5,396.03	-59.81	-140.91	14,457,143.51	1,726,417.68	39.80848523	-80.69376346
5,500.00	3.00	247.00	5,495.89	-61.86	-145.73	14,457,141.47	1,726,412.87	39.80847966	-80.69378064
5,600.00	3.00	247.00	5,595.75	-63.90	-150.55	14,457,139.42	1,726,408.05	39.80847409	-80.69379782
5,700.00	3.00	247.00	5,695.61	-65.95	-155.37	14,457,137.38	1,726,403.23	39.80846852	-80.69381500
5,800.00	3.00	247.00	5,795.48	-67.99	-160.18	14,457,135.33	1,726,398.41	39.80846295	-80.69383217
5,900.00	3.00	247.00	5,895.34	-70.04	-165.00	14,457,133.29	1,726,393.60	39.80845738	-80.69384935
6,000.00	3.00	247.00	5,995.20	-72.08	-169.82	14,457,131.24	1,726,388.78	39.80845181	-80.69386653
6,100.00	3.00	247.00	6,095.07	-74.13	-174.64	14,457,129.20	1,726,383.96	39.80844624	-80.69388371
6,200.00	3.00	247.00	6,194.93	-76.17	-179.45	14,457,127.15	1,726,379.14	39.80844067	-80.69390089
6,300.00	3.00	247.00	6,294.79	-78.22	-184.27	14,457,125.11	1,726,374.33	39.80843510	-80.69391807
6,400.00	3.00	247.00	6,394.66	-80.26	-189.09	14,457,123.06	1,726,369.51	39.80842953	-80.69393525
6,500.00	3.00	247.00	6,494.52	-82.31	-193.91	14,457,121.02	1,726,364.69	39.80842396	-80.69395243
6,600.00	3.00	247.00	6,594.38	-84.35	-198.72	14,457,118.97	1,726,359.87	39.80841838	-80.69396961
6,700.00	3.00	247.00	6,694.24	-86.40	-203.54	14,457,116.93	1,726,355.06	39.80841281	-80.69398679
6,800.00	3.00	247.00	6,794.11	-88.44	-208.36	14,457,114.88	1,726,350.24	39.80840724	-80.69400397
6,900.00	3.00	247.00	6,893.97	-90.49	-213.18	14,457,112.84	1,726,345.42	39.80840167	-80.69402115
7,000.00	3.00	247.00	6,993.83	-92.53	-217.99	14,457,110.79	1,726,340.60	39.80839610	-80.69403833
7,100.00	3.00	247.00	7,093.70	-94.58	-222.81	14,457,108.75	1,726,335.79	39.80839053	-80.69405550
7,200.00	3.00	247.00	7,193.56	-96.62	-227.63	14,457,106.70	1,726,330.97	39.80838496	-80.69407268
7,300.00	3.00	247.00	7,293.42	-98.67	-232.45	14,457,104.66	1,726,326.15	39.80837939	-80.69408986
7,400.00	3.00	247.00	7,393.28	-100.71	-237.27	14,457,102.61	1,726,321.33	39.80837382	-80.69410704
7,500.00	3.00	247.00	7,493.15	-102.76	-242.08	14,457,100.57	1,726,316.52	39.80836825	-80.69412422
7,600.00	3.00	247.00	7,593.01	-104.80	-246.90	14,457,098.52	1,726,311.70	39.80836268	-80.69414140
7,700.00	3.00	247.00	7,692.87	-106.85	-251.72	14,457,096.48	1,726,306.88	39.80835711	-80.69415858
7,800.00	3.00	247.00	7,792.74	-108.89	-256.54	14,457,094.43	1,726,302.06	39.80835154	-80.69417576
7,900.00	3.00	247.00	7,892.60	-110.94	-261.35	14,457,092.39	1,726,297.25	39.80834597	-80.69419294
8,000.00	3.00	247.00	7,992.46	-112.98	-266.17	14,457,090.34	1,726,292.43	39.80834040	-80.69421012
8,100.00	3.00	247.00	8,092.33	-115.03	-270.99	14,457,088.30	1,726,287.61	39.80833482	-80.69422730
8,200.00	3.00	247.00	8,192.19	-117.07	-275.81	14,457,086.25	1,726,282.79	39.80832925	-80.69424448
8,300.00	3.00	247.00	8,292.05	-119.12	-280.62	14,457,084.21	1,726,277.98	39.80832368	-80.69426166
8,400.00	3.00	247.00	8,391.91	-121.16	-285.44	14,457,082.16	1,726,273.16	39.80831811	-80.69427883
8,500.00	3.00	247.00	8,491.78	-123.21	-290.26	14,457,080.12	1,726,268.34	39.80831254	-80.69429601
8,508.23	3.00	247.00	8,500.00	-123.38	-290.65	14,457,079.95	1,726,267.94	39.80831208	-80.69429743
Begin 2°/100' build/turn									
8,600.00	4.81	242.30	8,591.55	-126.10	-296.27	14,457,077.22	1,726,262.33	39.80830465	-80.69431746
8,700.00	6.80	240.03	8,691.03	-131.01	-305.11	14,457,072.32	1,726,253.49	39.80829126	-80.69434899
8,800.00	8.79	238.79	8,790.10	-137.92	-316.77	14,457,065.40	1,726,241.63	39.80827238	-80.69439059
8,899.98	10.78	238.00	8,888.62	-146.84	-331.24	14,457,056.49	1,726,227.36	39.80824803	-80.69444221
Begin 10.78° tangent									
8,900.00	10.78	238.00	8,888.64	-146.84	-331.24	14,457,056.49	1,726,227.36	39.80824803	-80.69444223
9,000.00	10.78	238.00	8,986.88	-156.75	-347.11	14,457,046.57	1,726,211.49	39.80822095	-80.69449885
9,100.00	10.78	238.00	9,085.11	-166.67	-362.98	14,457,036.66	1,726,195.62	39.80819387	-80.69455547
9,200.00	10.78	238.00	9,183.35	-176.58	-378.84	14,457,026.74	1,726,179.75	39.80816679	-80.69461210
9,300.00	10.78	238.00	9,281.59	-186.50	-394.71	14,457,016.83	1,726,163.89	39.80813971	-80.69466872
9,400.00	10.78	238.00	9,379.81	-196.41	-410.58	14,457,006.91	1,726,148.02	39.80811263	-80.69472534
9,500.00	10.78	238.00	9,478.05	-206.33	-426.45	14,456,997.00	1,726,132.15	39.80808556	-80.69478197
9,600.00	10.78	238.00	9,576.28	-216.24	-442.32	14,456,987.08	1,726,116.28	39.80805848	-80.69483859
9,700.00	10.78	238.00	9,674.52	-226.15	-458.18	14,456,977.17	1,726,100.41	39.80803140	-80.69489521
9,800.00	10.78	238.00	9,772.75	-236.07	-474.05	14,456,967.26	1,726,084.55	39.80800432	-80.69495184
9,900.00	10.78	238.00	9,870.99	-245.99	-489.92	14,456,957.34	1,726,068.68	39.80797724	-80.69500846
10,000.00	10.78	238.00	9,969.22	-255.90	-505.79	14,456,947.43	1,726,052.81	39.80795016	-80.69506508



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 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
10,100.00	10.78	238.00	10,057.45	-265.81	-521.66	14,456,937.51	1,725,036.94	39.80792308	-80.69512171
10,200.00	10.78	238.00	10,165.68	-275.73	-537.53	14,456,927.80	1,726,021.07	39.80789600	-80.69517833
10,300.00	10.78	238.00	10,263.92	-285.64	-553.39	14,456,917.68	1,726,005.20	39.80786892	-80.69523495
10,400.00	10.78	238.00	10,362.15	-295.56	-569.26	14,456,907.77	1,725,989.34	39.80784185	-80.69529158
10,500.00	10.78	238.00	10,460.39	-305.47	-585.13	14,456,897.86	1,725,973.47	39.80781477	-80.69534820
10,600.00	10.78	238.00	10,558.62	-315.38	-601.00	14,456,887.94	1,725,957.60	39.80778769	-80.69540482
10,700.00	10.78	238.00	10,656.85	-325.30	-616.87	14,456,878.03	1,725,941.73	39.80776061	-80.69546145
10,800.00	10.78	238.00	10,755.09	-335.21	-632.74	14,456,868.11	1,725,925.86	39.80773353	-80.69551807
10,900.00	10.78	238.00	10,853.32	-345.13	-648.60	14,456,858.20	1,725,910.00	39.80770645	-80.69557469
11,000.00	10.78	238.00	10,951.56	-355.04	-664.47	14,456,848.28	1,725,894.13	39.80767937	-80.69563132
11,100.00	10.78	238.00	11,049.79	-364.95	-680.34	14,456,838.37	1,725,878.26	39.80765229	-80.69568794
11,104.61	10.78	238.00	11,054.32	-365.41	-681.07	14,456,837.91	1,725,877.53	39.80765104	-80.69569055
Begin 10°/100' build/turn									
11,200.00	14.58	196.86	11,147.55	-381.67	-692.15	14,456,821.65	1,725,866.45	39.80760650	-80.69573018
11,300.00	22.51	177.16	11,242.37	-412.91	-694.86	14,456,790.41	1,725,863.74	39.80752073	-80.69574021
11,400.00	31.59	167.84	11,331.38	-457.75	-688.37	14,456,745.58	1,725,870.22	39.80739754	-80.69571767
11,500.00	41.07	162.43	11,411.86	-514.82	-672.90	14,456,688.51	1,725,885.70	39.80724067	-80.69568328
11,600.00	50.72	158.77	11,481.39	-582.38	-648.90	14,456,620.94	1,725,909.70	39.80705469	-80.69557863
11,700.00	60.46	156.00	11,537.83	-658.40	-617.11	14,456,544.93	1,725,941.49	39.80684584	-80.69548638
11,800.00	70.25	153.73	11,579.49	-740.54	-578.49	14,456,462.78	1,725,980.10	39.80661968	-80.69532964
11,900.00	80.06	151.72	11,605.08	-826.33	-534.22	14,456,376.99	1,726,024.38	39.80638388	-80.69517324
11,991.05	89.00	150.00	11,613.76	-905.41	-490.13	14,456,297.92	1,726,068.47	39.80618630	-80.69501719
Begin 89.00° lateral section									
12,000.00	89.00	150.00	11,613.91	-913.16	-485.65	14,456,290.17	1,726,072.95	39.80614498	-80.69500135
12,100.00	89.00	150.00	11,615.68	-899.75	-435.86	14,456,203.58	1,726,122.94	39.80590671	-80.69482440
12,200.00	89.00	150.00	11,617.40	-1,086.34	-385.67	14,456,116.99	1,726,172.93	39.80566845	-80.69464744
12,300.00	89.00	150.00	11,619.15	-1,172.92	-335.67	14,456,030.40	1,726,222.92	39.80543019	-80.69447049
12,400.00	89.00	150.00	11,620.89	-1,259.51	-285.68	14,455,943.81	1,726,272.92	39.80519192	-80.69429354
12,500.00	89.00	150.00	11,622.64	-1,346.10	-235.69	14,455,857.22	1,726,322.91	39.80495366	-80.69411659
12,600.00	89.00	150.00	11,624.38	-1,432.69	-185.70	14,455,770.63	1,726,372.90	39.80471539	-80.69393964
12,700.00	89.00	150.00	11,626.13	-1,519.28	-135.71	14,455,684.04	1,726,422.89	39.80447713	-80.69378269
12,800.00	89.00	150.00	11,627.87	-1,605.87	-85.71	14,455,597.45	1,726,472.89	39.80423886	-80.69358574
12,900.00	89.00	150.00	11,629.62	-1,692.46	-35.72	14,455,510.86	1,726,522.88	39.80400059	-80.69340880
13,000.00	89.00	150.00	11,631.37	-1,779.05	14.27	14,455,424.27	1,726,572.87	39.80376233	-80.69323185
13,100.00	89.00	150.00	11,633.11	-1,865.64	64.26	14,455,337.69	1,726,622.86	39.80352405	-80.69305491
13,200.00	89.00	150.00	11,634.86	-1,952.23	114.26	14,455,251.10	1,726,672.86	39.80328579	-80.69287797
13,300.00	89.00	150.00	11,636.60	-2,038.82	164.25	14,455,164.51	1,726,722.85	39.80304753	-80.69270103
13,400.00	89.00	150.00	11,638.35	-2,125.41	214.24	14,455,077.92	1,726,772.84	39.80280926	-80.69252409
13,500.00	89.00	150.00	11,640.09	-2,212.00	264.23	14,454,991.33	1,726,822.83	39.80257099	-80.69234715
13,600.00	89.00	150.00	11,641.84	-2,298.59	314.23	14,454,904.74	1,726,872.83	39.80233272	-80.69217021
13,700.00	89.00	150.00	11,643.58	-2,385.18	364.22	14,454,818.15	1,726,922.82	39.80209446	-80.69199328
13,800.00	89.00	150.00	11,645.33	-2,471.77	414.21	14,454,731.56	1,726,972.81	39.80185619	-80.69181634
13,900.00	89.00	150.00	11,647.07	-2,558.35	464.20	14,454,644.97	1,727,022.80	39.80161792	-80.69163941
14,000.00	89.00	150.00	11,648.82	-2,644.94	514.20	14,454,558.38	1,727,072.79	39.80137965	-80.69146248
14,100.00	89.00	150.00	11,650.56	-2,731.53	564.19	14,454,471.79	1,727,122.79	39.80114138	-80.69128554
14,200.00	89.00	150.00	11,652.31	-2,818.12	614.18	14,454,385.20	1,727,172.78	39.80090311	-80.69110861
14,300.00	89.00	150.00	11,654.05	-2,904.71	664.17	14,454,298.61	1,727,222.77	39.80066484	-80.69093169
14,400.00	89.00	150.00	11,655.80	-2,991.30	714.17	14,454,212.02	1,727,272.76	39.80042657	-80.69075476
14,500.00	89.00	150.00	11,657.54	-3,077.89	764.16	14,454,125.43	1,727,322.75	39.80018830	-80.69057783
14,600.00	89.00	150.00	11,659.29	-3,164.48	814.15	14,454,038.84	1,727,372.75	39.79995003	-80.69040091
14,700.00	89.00	150.00	11,661.03	-3,251.07	864.14	14,453,952.26	1,727,422.74	39.79971176	-80.69022398
14,800.00	89.00	150.00	11,662.78	-3,337.66	914.14	14,453,865.67	1,727,472.73	39.79947349	-80.69004706
14,900.00	89.00	150.00	11,664.52	-3,424.25	964.13	14,453,779.08	1,727,522.73	39.79923522	-80.68987014
15,000.00	89.00	150.00	11,666.27	-3,510.84	1,014.12	14,453,692.49	1,727,572.72	39.79899695	-80.68969322



Planning Report - Geographic

Database:	DB_Jul2218dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 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
15,100.00	89.00	150.00	11,668.02	-3,597.43	1,064.11	14,453,605.90	1,727,822.71	39.79875867	-80.68951630
15,200.00	89.00	150.00	11,669.76	-3,684.02	1,114.10	14,453,519.31	1,727,672.70	39.79852040	-80.68933938
15,300.00	89.00	150.00	11,671.51	-3,770.61	1,164.10	14,453,432.72	1,727,722.70	39.79828213	-80.68916247
15,400.00	89.00	150.00	11,673.25	-3,857.19	1,214.09	14,453,346.13	1,727,772.69	39.79804366	-80.68898555
15,500.00	89.00	150.00	11,675.00	-3,943.78	1,264.08	14,453,259.54	1,727,822.68	39.79780558	-80.68880864
15,600.00	89.00	150.00	11,676.74	-4,030.37	1,314.07	14,453,172.95	1,727,872.67	39.79756731	-80.68863172
15,700.00	89.00	150.00	11,678.49	-4,116.96	1,364.07	14,453,086.36	1,727,922.67	39.79732904	-80.68845481
15,800.00	89.00	150.00	11,680.23	-4,203.55	1,414.06	14,452,999.77	1,727,972.66	39.79709076	-80.68827790
15,900.00	89.00	150.00	11,681.98	-4,290.14	1,464.05	14,452,913.18	1,728,022.65	39.79685249	-80.68810099
16,000.00	89.00	150.00	11,683.72	-4,376.73	1,514.04	14,452,826.59	1,728,072.64	39.79661421	-80.68792408
16,100.00	89.00	150.00	11,685.47	-4,463.32	1,564.04	14,452,740.00	1,728,122.63	39.79637594	-80.68774718
16,200.00	89.00	150.00	11,687.21	-4,549.91	1,614.03	14,452,653.42	1,728,172.63	39.79613766	-80.68757027
16,300.00	89.00	150.00	11,688.96	-4,636.50	1,664.02	14,452,566.83	1,728,222.62	39.79589939	-80.68739337
16,400.00	89.00	150.00	11,690.70	-4,723.09	1,714.01	14,452,480.24	1,728,272.61	39.79566111	-80.68721646
16,500.00	89.00	150.00	11,692.45	-4,809.68	1,764.01	14,452,393.65	1,728,322.60	39.79542284	-80.68703956
16,600.00	89.00	150.00	11,694.19	-4,896.27	1,814.00	14,452,307.06	1,728,372.60	39.79518456	-80.68686266
16,700.00	89.00	150.00	11,695.94	-4,982.86	1,863.99	14,452,220.47	1,728,422.59	39.79494629	-80.68668576
16,800.00	89.00	150.00	11,697.68	-5,069.45	1,913.98	14,452,133.88	1,728,472.58	39.79470801	-80.68650886
16,900.00	89.00	150.00	11,699.43	-5,156.04	1,963.98	14,452,047.29	1,728,522.57	39.79446973	-80.68633197
17,000.00	89.00	150.00	11,701.17	-5,242.62	2,013.97	14,451,960.70	1,728,572.57	39.79423145	-80.68615507
17,100.00	89.00	150.00	11,702.92	-5,329.21	2,063.96	14,451,874.11	1,728,622.56	39.79399318	-80.68597818
17,200.00	89.00	150.00	11,704.67	-5,415.80	2,113.95	14,451,787.52	1,728,672.55	39.79375490	-80.68580128
17,300.00	89.00	150.00	11,706.41	-5,502.39	2,163.94	14,451,700.93	1,728,722.54	39.79351662	-80.68562439
17,400.00	89.00	150.00	11,708.16	-5,588.98	2,213.94	14,451,614.34	1,728,772.54	39.79327834	-80.68544750
17,500.00	89.00	150.00	11,709.90	-5,675.57	2,263.93	14,451,527.75	1,728,822.53	39.79304006	-80.68527061
17,600.00	89.00	150.00	11,711.65	-5,762.16	2,313.92	14,451,441.16	1,728,872.52	39.79280179	-80.68509372
17,700.00	89.00	150.00	11,713.39	-5,848.75	2,363.91	14,451,354.57	1,728,922.51	39.79256351	-80.68491683
17,800.00	89.00	150.00	11,715.14	-5,935.34	2,413.91	14,451,267.99	1,728,972.51	39.79232523	-80.68473995
17,900.00	89.00	150.00	11,716.88	-6,021.93	2,463.90	14,451,181.40	1,729,022.50	39.79208695	-80.68456306
18,000.00	89.00	150.00	11,718.63	-6,108.52	2,513.89	14,451,094.81	1,729,072.49	39.79184867	-80.68438618
18,100.00	89.00	150.00	11,720.37	-6,195.11	2,563.88	14,451,008.22	1,729,122.48	39.79161039	-80.68420930
18,200.00	89.00	150.00	11,722.12	-6,281.70	2,613.88	14,450,921.63	1,729,172.47	39.79137211	-80.68403241
18,300.00	89.00	150.00	11,723.86	-6,368.29	2,663.87	14,450,835.04	1,729,222.47	39.79113383	-80.68385553
18,400.00	89.00	150.00	11,725.61	-6,454.88	2,713.86	14,450,748.45	1,729,272.46	39.79089555	-80.68367866
18,500.00	89.00	150.00	11,727.35	-6,541.48	2,763.85	14,450,661.86	1,729,322.45	39.79065728	-80.68350178
18,600.00	89.00	150.00	11,729.10	-6,628.07	2,813.85	14,450,575.27	1,729,372.44	39.79041900	-80.68332490
18,700.00	89.00	150.00	11,730.84	-6,714.66	2,863.84	14,450,488.68	1,729,422.44	39.79018072	-80.68314802
18,800.00	89.00	150.00	11,732.59	-6,801.25	2,913.83	14,450,402.09	1,729,472.43	39.78994244	-80.68297115
18,900.00	89.00	150.00	11,734.33	-6,887.82	2,963.82	14,450,315.50	1,729,522.42	39.78970416	-80.68279428
19,000.00	89.00	150.00	11,736.08	-6,974.41	3,013.82	14,450,228.91	1,729,572.41	39.78946588	-80.68261741
19,100.00	89.00	150.00	11,737.82	-7,061.00	3,063.81	14,450,142.32	1,729,622.41	39.78922759	-80.68244054
19,200.00	89.00	150.00	11,739.57	-7,147.59	3,113.80	14,450,055.73	1,729,672.40	39.78898929	-80.68226367
19,300.00	89.00	150.00	11,741.32	-7,234.18	3,163.79	14,449,969.15	1,729,722.39	39.78875100	-80.68208680
19,400.00	89.00	150.00	11,743.06	-7,320.77	3,213.78	14,449,882.56	1,729,772.38	39.78851272	-80.68190993
19,500.00	89.00	150.00	11,744.81	-7,407.36	3,263.78	14,449,795.97	1,729,822.38	39.78827444	-80.68173307
19,600.00	89.00	150.00	11,746.55	-7,493.95	3,313.77	14,449,709.38	1,729,872.37	39.78803616	-80.68155620
19,700.00	89.00	150.00	11,748.30	-7,580.54	3,363.76	14,449,622.79	1,729,922.36	39.78779787	-80.68137934
19,800.00	89.00	150.00	11,750.04	-7,667.13	3,413.75	14,449,536.20	1,729,972.35	39.78755958	-80.68120248
19,900.00	89.00	150.00	11,751.79	-7,753.72	3,463.75	14,449,449.61	1,730,022.35	39.78732130	-80.68102562
20,000.00	89.00	150.00	11,753.53	-7,840.30	3,513.74	14,449,363.02	1,730,072.34	39.78708301	-80.68084876
20,100.00	89.00	150.00	11,755.28	-7,926.89	3,563.73	14,449,276.43	1,730,122.33	39.78684473	-80.68067190
20,200.00	89.00	150.00	11,757.02	-8,013.48	3,613.72	14,449,189.84	1,730,172.32	39.78660644	-80.68049504
20,300.00	89.00	150.00	11,758.77	-8,100.07	3,663.72	14,449,103.25	1,730,222.32	39.78636815	-80.68031819
20,400.00	89.00	150.00	11,760.51	-8,186.66	3,713.71	14,449,016.66	1,730,272.31	39.78612987	-80.68014133
20,500.00	89.00	150.00	11,762.26	-8,273.25	3,763.70	14,448,930.07	1,730,322.30	39.78589158	-80.67996448



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 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	
20,600.00	89.00	150.00	11,764.00	-8,359.84	3,813.69	14,448,843.48	1,730,372.29	39.78565329	-80.67978763	
20,700.00	89.00	150.00	11,765.75	-8,446.43	3,863.69	14,448,756.89	1,730,422.28	39.78541501	-80.67961078	
20,800.00	89.00	150.00	11,767.49	-8,533.02	3,913.68	14,448,670.30	1,730,472.28	39.78517672	-80.67943393	
20,900.00	89.00	150.00	11,769.24	-8,619.61	3,963.67	14,448,583.72	1,730,522.27	39.78493843	-80.67925708	
21,000.00	89.00	150.00	11,770.98	-8,706.20	4,013.66	14,448,497.13	1,730,572.26	39.78470014	-80.67908023	
21,100.00	89.00	150.00	11,772.73	-8,792.79	4,063.66	14,448,410.54	1,730,622.25	39.78446185	-80.67890339	
21,200.00	89.00	150.00	11,774.47	-8,879.38	4,113.65	14,448,323.95	1,730,672.25	39.78422356	-80.67872654	
21,300.00	89.00	150.00	11,776.22	-8,965.97	4,163.64	14,448,237.36	1,730,722.24	39.78398528	-80.67854970	
21,400.00	89.00	150.00	11,777.97	-9,052.56	4,213.63	14,448,150.77	1,730,772.23	39.78374699	-80.67837286	
21,500.00	89.00	150.00	11,779.71	-9,139.15	4,263.62	14,448,064.18	1,730,822.22	39.78350870	-80.67819601	
21,600.00	89.00	150.00	11,781.46	-9,225.73	4,313.62	14,447,977.59	1,730,872.22	39.78327041	-80.67801917	
21,700.00	89.00	150.00	11,783.20	-9,312.32	4,363.61	14,447,891.00	1,730,922.21	39.78303212	-80.67784234	
21,800.00	89.00	150.00	11,784.95	-9,398.91	4,413.60	14,447,804.41	1,730,972.20	39.78279383	-80.67766550	
21,900.00	89.00	150.00	11,786.69	-9,485.50	4,463.59	14,447,717.82	1,731,022.19	39.78255554	-80.67748866	
22,000.00	89.00	150.00	11,788.44	-9,572.09	4,513.59	14,447,631.23	1,731,072.19	39.78231725	-80.67731183	
22,100.00	89.00	150.00	11,790.18	-9,658.68	4,563.58	14,447,544.64	1,731,122.18	39.78207895	-80.67713499	
22,200.00	89.00	150.00	11,791.93	-9,745.27	4,613.57	14,447,458.05	1,731,172.17	39.78184066	-80.67695816	
22,300.00	89.00	150.00	11,793.67	-9,831.86	4,663.56	14,447,371.46	1,731,222.16	39.78160237	-80.67678133	
22,400.00	89.00	150.00	11,795.42	-9,918.45	4,713.56	14,447,284.88	1,731,272.16	39.78136408	-80.67660450	
22,500.00	89.00	150.00	11,797.16	-10,005.04	4,763.55	14,447,198.29	1,731,322.15	39.78112579	-80.67642767	
22,600.00	89.00	150.00	11,798.91	-10,091.63	4,813.54	14,447,111.70	1,731,372.14	39.78088749	-80.67625084	
22,700.00	89.00	150.00	11,800.65	-10,178.22	4,863.53	14,447,025.11	1,731,422.13	39.78064920	-80.67607402	
22,800.00	89.00	150.00	11,802.40	-10,264.81	4,913.53	14,446,938.52	1,731,472.12	39.78041091	-80.67589719	
22,900.00	89.00	150.00	11,804.14	-10,351.40	4,963.52	14,446,851.93	1,731,522.12	39.78017261	-80.67572037	
23,000.00	89.00	150.00	11,805.89	-10,437.99	5,013.51	14,446,765.34	1,731,572.11	39.77993432	-80.67554354	
23,100.00	89.00	150.00	11,807.63	-10,524.57	5,063.50	14,446,678.75	1,731,622.10	39.77969603	-80.67536672	
23,200.00	89.00	150.00	11,809.38	-10,611.16	5,113.50	14,446,592.16	1,731,672.09	39.77945773	-80.67518990	
23,300.00	89.00	150.00	11,811.12	-10,697.75	5,163.49	14,446,505.57	1,731,722.09	39.77921944	-80.67501308	
23,400.00	89.00	150.00	11,812.87	-10,784.34	5,213.48	14,446,418.98	1,731,772.08	39.77898114	-80.67483626	
23,500.00	89.00	150.00	11,814.62	-10,870.93	5,263.47	14,446,332.39	1,731,822.07	39.77874285	-80.67465945	
23,600.00	89.00	150.00	11,816.36	-10,957.52	5,313.46	14,446,245.80	1,731,872.06	39.77850455	-80.67448263	
23,700.00	89.00	150.00	11,818.11	-11,044.11	5,363.46	14,446,159.21	1,731,922.06	39.77826626	-80.67430582	
23,800.00	89.00	150.00	11,819.85	-11,130.70	5,413.45	14,446,072.62	1,731,972.05	39.77802796	-80.67412900	
23,808.54	89.00	150.00	11,820.00	-11,138.10	5,417.72	14,446,065.23	1,731,976.32	39.77800761	-80.67411390	
PBHL/TD										
23,808.55	89.00	150.00	11,820.00	-11,138.10	5,417.72	14,446,065.22	1,731,976.32	39.77800759	-80.67411389	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Heaven Hill 3-7 HU LP - hit/miss target - Shape - Point	0.00	0.01	11,602.00	-359.33	-805.56	14,456,844.00	1,725,753.04	39.80768891	-80.69613375	
- plan misses target center by 279.15usft at 11500.00usft MD (11411.88 TVD, -514.82 N, -672.80 E)										
Heaven Hill 3-7 HU BHL - plan hits target center - Point	0.00	0.00	11,820.00	-11,138.10	5,417.72	14,446,065.22	1,731,976.32	39.77800759	-80.67411389	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 3-7 HU
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1326 @ 1326.00usft
Project:	Marshall County, West Virginia	MD Reference:	RKB=1326 @ 1326.00usft
Site:	Heaven Hill 3	North Reference:	Grid
Well:	Heaven Hill 3-7 HU	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
120.00	120.00	30" Casing @ 120 TVD	30	36	
1,185.00	1,185.00	20" Casing @ 1185 TVD	20	24	
2,800.41	2,800.00	13 3/8" Casing @ 2800 TVD	13-3/8	17	
10,438.53	10,400.00	9 5/8" Casing @ 10400 TVD	9-5/8	12-1/4	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,400.00	2,400.00	0.00	0.00	KOP Begin 2"/100' build	
2,550.00	2,549.93	-1.53	-3.61	Begin 3.00° tangent	
8,508.23	8,500.00	-123.38	-290.65	Begin 2"/100' build/turn	
8,899.88	8,888.62	-146.84	-331.24	Begin 10.78° tangent	
11,104.61	11,054.32	-365.41	-681.07	Begin 10"/100' build/turn	
11,991.05	11,613.76	-905.41	-490.13	Begin 89.00° lateral section	
23,808.54	11,820.00	-11,136.10	5,417.72	PBHL/TD	

WW-9
(4/16)

API Number 47 - 051 - 01967

Operator's Well No. Heaven Hill 3-8HU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 965, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1380426)

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

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

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

Company Official Signature _____

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

RECEIVED
Office of Oil and Gas

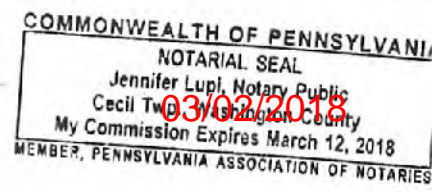
SEP - 6 2017

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

Jennifer Lupi Notary Public
March 12, 2018

My commission expires _____

WV Department of Environmental Protection



Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 18.43 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Wilder*

Comments: _____

Title: Oil & Gas Inspector

Date: 8/31/17

Field Reviewed? () Yes () No

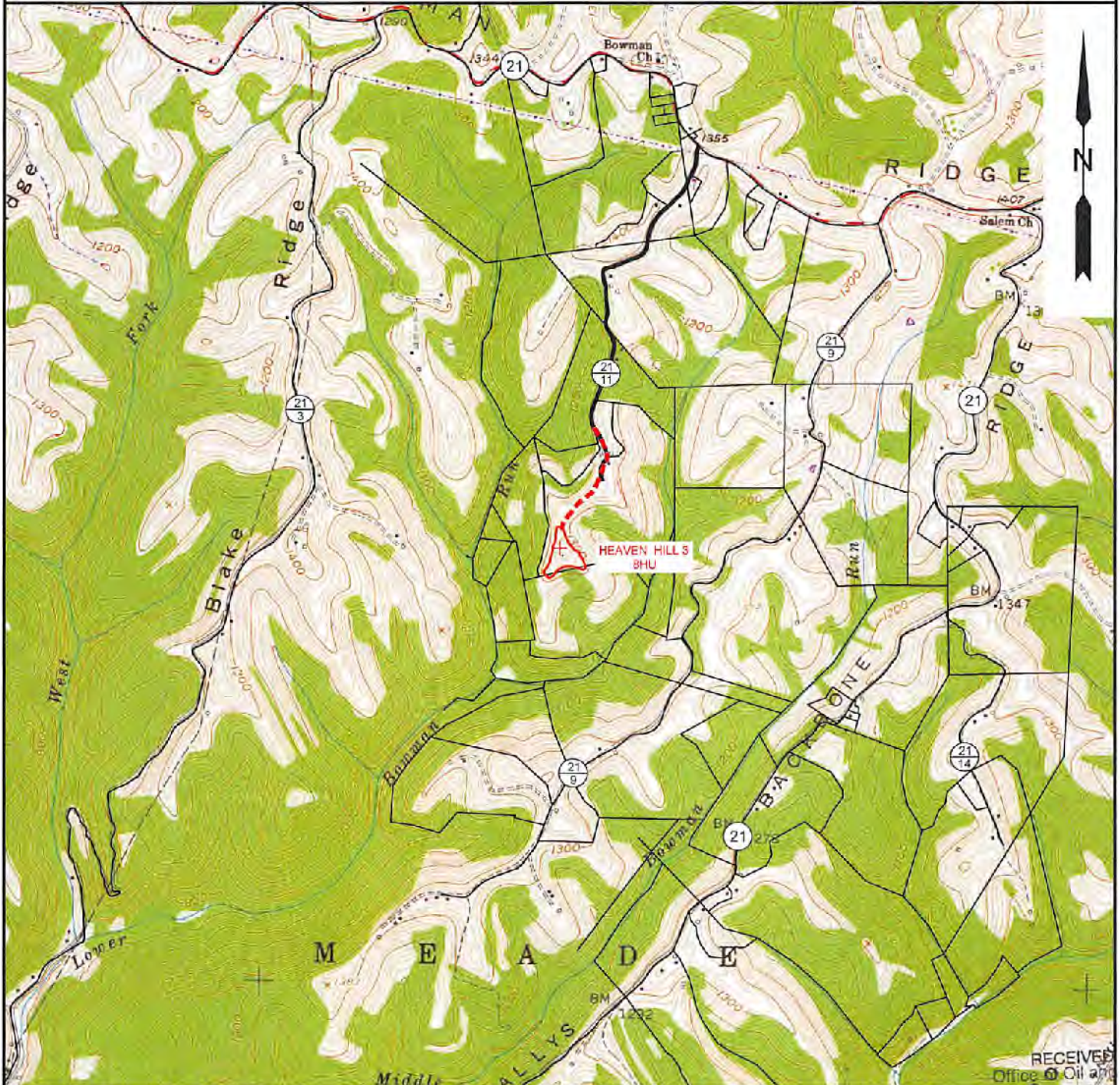
RECEIVED
Office of Oil and Gas

SEP - 6 2017

WV Department of
Environmental Protection

51-01967

PROPOSED HEAVEN HILL 3 - 8HU



RECEIVED
Office of Oil and Gas

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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 47°57'55" W AT 50,802' FROM HEAVEN HILL 3 - 8HU SURFACE LOCATION

SEP - 6 2017

WV Department of
Environmental Protection

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Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	08/25/2017	1" = 2000'

TUG HILL
OPERATING

03/02/2018



Well Site Safety Plan

Tug Hill Operating, LLC

JW
1/26/18

Well Name: Heaven Hill 3-8HU

Pad Location: Heaven Hill Unit 3

Marshall County, West Virginia

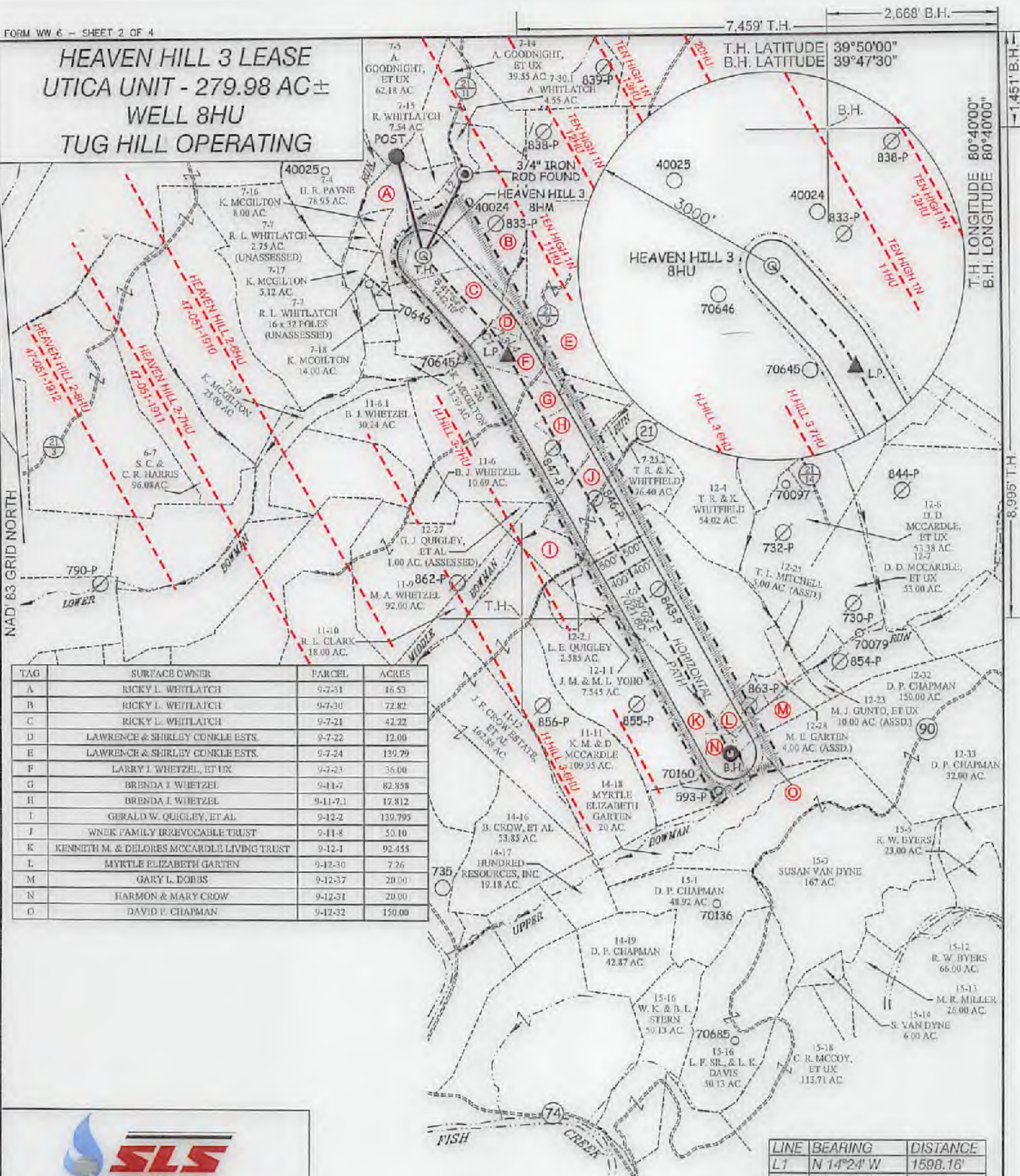
UTM (meters), NAD83, Zone 17:

NORTHING -4,406,563.54

EASTING -526,259.83

January 2018

**HEAVEN HILL 3 LEASE
UTICA UNIT - 279.98 AC±
WELL 8HU
TUG HILL OPERATING**



TAG	SURFACE OWNER	PARCEL	ACRES
A	RICKY L. WHITLATCH	9-7-31	16.53
B	RICKY L. WHITLATCH	9-7-30	72.82
C	RICKY L. WHITLATCH	9-7-21	42.22
D	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-22	12.00
E	LAWRENCE & SHIRLEY CONKLE ESTS.	9-7-24	139.79
F	LARRY J. WHEZEL, ET UX	9-7-23	36.00
G	BRENDA J. WHEZEL	9-11-7	82.958
H	BRENDA J. WHEZEL	9-11-7.1	12.812
I	GERALD W. QUIGLEY, ET AL.	9-12-2	139.795
J	WNEK FAMILY IRREVOCABLE TRUST	9-11-8	50.10
K	KENNETH M. & DELORES MCCARDLE LIVING TRUST	9-12-1	92.455
L	MYRTLE ELIZABETH GARTEN	9-12-30	7.26
M	GARY L. DOBBS	9-12-57	20.00
N	HARMON & MARY CROW	9-12-51	20.00
O	DAVID P. CHAPMAN	9-12-32	150.00

LINE	BEARING	DISTANCE
L1	N 14°24' W	1598.16'
L2	N 27°23' E	1423.2'
L3	S 31°58' E	136.67'
L4	S 30°03' E	217.72'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	226.85'	1135.61'	11°26'44"	N 37°13' W	226.47'

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www.slsurveyors.com

P.S. 677
Gregory A. Smith



(+) 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 & 4)

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

NAD'83 S.P.C.(FT) N. 478,874.16 E. 1,833,301.30
 NAD'83 GEO. LAT-(N) 39.803640 LONG-(W) 80.693218
 NAD'83 UTM (M) N. 4,406,563.54 E. 526,259.83

LANDING POINT

NAD'83 S.P.C.(FT) N. 477,316.1 E. 1,834,582.8
 NAD'83 GEO. LAT-(N) 39.804410 LONG-(W) 80.688583
 NAD'83 UTM (M) N. 4,406,095.4 E. 526,638.2

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 471,178.0 E. 1,637,982.5
 NAD'83 GEO. LAT-(N) 39.787883 LONG-(W) 80.676191
 NAD'83 UTM (M) N. 4,404,242.7 E. 527,728.2

SCALE 1" = 2000' FILE NO. 8654P8HUR2.dwg

DATE AUGUST 25, 2017

REVISED JANUARY 25, 2018 & JANUARY 29, 2018

OPERATORS WELL NO. HEAVEN HILL 3-8HU

API WELL NO. 47 - 051 - 01967H6A

NO. 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

03/02/2018

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

B.H.

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

HEAVEN HILL 3 LEASE
UTICA UNIT - 279.98 AC ±
WELL 8HU
TUG HILL OPERATING

Table with columns: No., Lease Name or No., Trg, Area, Oil & Gas Royalty Owners, and Dead Book/Page. Lists various leasehold interests and their owners.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
NAD'83 S.P.C.(FT) N. 478,874.16 E. 1,633,301.30
NAD'83 GEO. LAT-(N) 39.806640 LONG-(W) 80.683218
NAD'83 UTM (M) N. 4,406,563.54 E. 526,259.83

LANDING POINT
NAD'83 S.P.C.(FT) N. 471,316.1 E. 1,634,562.8
NAD'83 GEO. LAT-(N) 39.804410 LONG-(W) 80.688583
NAD'83 UTM (M) N. 4,406,095.4 E. 526,658.2

BOTTOM HOLE
NAD'83 S.P.C.(FT) N. 471,178.0 E. 1,637,992.5
NAD'83 GEO. LAT-(N) 39.787633 LONG-(W) 80.676161
NAD'83 UTM (M) N. 4,404,242.7 E. 527,728.2



NOTES ON SURVEY

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

SLS Land & Energy Development Solutions from the ground up. P.O. Box 160 | 12 Ventures Drive | Oliveville, WV 26051 | (304) 462-5934 www.slsurveys.com

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

P.S. 677 Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE AUGUST 25, 20 17
REVISED JANUARY 25, 2018 & JANUARY 29, 2018
OPERATORS WELL NO. HEAVEN HILL 3-8HU
API WELL NO. 47-051-01967
STATE COUNTY PERMIT H6A

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8654P8HUR2.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)
SCALE 1" = 2000'

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

WELL TYPE: OIL GAS X INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION X STORAGE DEEP X SHALLOW
LOCATION: ELEVATION GROUND = 1,339.40' 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 & 4 ACREAGE 72.82±
PROPOSED WORK: DRILL X CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,829' / TMD: 19,217'

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

COUNTY NAME PERMIT

03/02/2018

HEAVEN HILL 3 LEASE
UTICA UNIT - 279.98 AC±
WELL 8HU
TUG HILL OPERATING



Table with columns: Well, Lease, Owner, and Lease/Well. Lists various lease and well identifiers and their corresponding owners.

Table with columns: Well, Lease, Owner, and Lease/Well. Continuation of the lease and well data from the previous table.

FILE NO. 8654P8HUR2.dwg
DATE AUGUST 25, 2017
REVISED JANUARY 25, 2018 & JANUARY 29, 2018
OPERATORS WELL NO. HEAVEN HILL 3-8HU
API WELL NO. 47-051-01967H6A
NO. STATE COUNTY PERMIT



STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
P.S. 677
Signature: 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 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313

COUNTY NAME
PERMIT

03/02/2018

HEAVEN HILL 3 LEASE
UTICA UNIT - 279.98 AC±
WELL 8HU
TUG HILL OPERATING



No.	Lease Name or No.	Tag	Percent	Oil & Gas Royalty Owner - Continued	Deed Book/Page
341	10*16096	J	9-12-30	THOMAS BANKIN	947 75
342	10*16098	J	9-12-30	TOBI J HOBBS	906 227
343	10*16093	J	9-12-30	TINA MOORE	921 334
344	10*16096	J	9-12-30	VIRGINIA L WHEATMAN	921 536
345	10*16093	J	9-12-30	WENDEY S MARKLE	908 609
346	10*16042	J	9-12-30	WILLIAM DALE BRASKETT	921 96
347	10*16004	J	9-12-30	WILLIAM AND SHERIE O TAYLOR	921 530
348	10*16046	J	9-12-30	WILSON ANDREW JACKSON	906 253
349	10*16044	K	9-12-30	WILSON ANDREW JACKSON	924 517
350	10*16045	K	9-12-30	WILSON ANDREW JACKSON	924 610
351	10*16098	K	9-12-30	THOMAS BRIGGS JR	904 556
352	10*16098	K	9-12-30	THOMAS BRIGGS JR	907 220
353	10*16099	L	9-12-30	WILLIAM MARTIN BIGGS ANGELA RAE MOORE	672 215
354	10*16098	L	9-12-30	ANN M & CLERG STEVENS	905 573
355	10*16072	L	9-12-30	ANNA MAC PATERSON	610 215
356	10*16072	L	9-12-30	ANN E B AND JOSEPH A MURPHY	613 289
357	10*16071	L	9-12-30	ARCA A HOLMS AND CARM HOLMES	904 605
358	10*16071	L	9-12-30	BARBARA I BEVERIDGE	926 625
359	10*16071	L	9-12-30	BECKY LANONG	921 467
360	10*16071	L	9-12-30	BELA H WELLENREITER	927 211
361	10*16071	L	9-12-30	BERNDA GILBERT	927 50
362	10*16071	L	9-12-30	BERNDA REED	904 444
363	10*16071	L	9-12-30	BIELA E HONES	915 480
364	10*16071	L	9-12-30	CEFRMAN AKCAH AND SUSAN MCCALL	904 536
365	10*16071	L	9-12-30	CAMA MALLEY	905 603
366	10*16071	L	9-12-30	CAROL L BOBBY AND DONALD J BOBBY	906 47
367	10*16071	L	9-12-30	CATHERINE LAND ERNEST M SEVERO	905 588
368	10*16071	L	9-12-30	CHAD TNC BENNETT AND MARY A BENNETT	930 239
369	10*16071	L	9-12-30	CHARLES SCAMON	904 500
370	10*16071	L	9-12-30	CHARLES BENNETT JR AND DONNA S BENNETT	906 7
371	10*16071	L	9-12-30	CHARLES W WILLIAMSON JR	906 331
372	10*16071	L	9-12-30	CHRISTINA W GILBERT	927 207
373	10*16071	L	9-12-30	CHRISTINA W GILBERT AND CHARLES E NESTLLE III	906 612
374	10*16071	L	9-12-30	CHRISTOPHER SANDERS	906 23
375	10*16071	L	9-12-30	CLARISSA MALONE	904 618
376	10*16071	L	9-12-30	COBA ALICE DAVIS	905 553
377	10*16071	L	9-12-30	CYNTHIA TEACHER GRAHAM	927 19
378	10*16071	L	9-12-30	DARLE ALLEY	927 204
379	10*16071	L	9-12-30	DARLE E WILLIAMSON AND HEATHER S WILLIAMSON	926 53
380	10*16071	L	9-12-30	DARLE LALLEY AND TERESA ALLEY	905 376
381	10*16071	L	9-12-30	DANNY CARROLL	926 244
382	10*16071	L	9-12-30	DEBORAH LUTTREY	905 630
383	10*16071	L	9-12-30	DEBORAH GUY EAST 231 EAST 24TH AVENUE	905 647
384	10*16071	L	9-12-30	DEBBIE D RUSH AND BETTY BETH RUSH	926 622
385	10*16071	L	9-12-30	DONALD WILLIAMSON	905 641
386	10*16071	L	9-12-30	DONALD ALLEY JR	906 30
387	10*16071	L	9-12-30	DONNA BURNS	904 610
388	10*16071	L	9-12-30	DONNA O MCYNSCH	934 600
389	10*16071	L	9-12-30	DONNA JUNE STRAIT	905 444
390	10*16071	L	9-12-30	DONNA K DUNN AND JAMES DUNN	905 443
391	10*16071	L	9-12-30	DONNA SMITH WELLEY	904 504
392	10*16071	L	9-12-30	DORITA FISH	927 200
393	10*16071	L	9-12-30	DORIS W LAMBERTA FRAZER	904 508
394	10*16071	L	9-12-30	EDZARTH STARK	904 512
395	10*16071	L	9-12-30	EMMA CRISWELL	924 545
396	10*16071	L	9-12-30	ERIC D SUMANON N FERLUCI	906 1
397	10*16071	L	9-12-30	FRANK A STORCH JR AND SUSAN STORCH	905 598
398	10*16071	L	9-12-30	FRIEDA A BIRNBAUM AND ROMAN BIRNBAUM	905 580
399	10*16071	L	9-12-30	GRENDA MASON	905 635
400	10*16071	L	9-12-30	GEORGE E HOLMES AND SUSAN HOLMES	927 86
401	10*16071	L	9-12-30	GEORGE R CORNELIUS JR AND JANNA JANOUSEK CORNELIUS	905 565
402	10*16071	L	9-12-30	ROBERT FOX	926 608
403	10*16071	L	9-12-30	JAMES S BRIDGES	905 645
404	10*16071	L	9-12-30	JANICE MANDER	906 50
405	10*16071	L	9-12-30	JENNIFER ALLEY	909 503
406	10*16071	L	9-12-30	JESSE HOLMES	905 541
407	10*16071	L	9-12-30	JOHN M SHALLENBERGER AND JOANNE SHALLENBERGER	927 6
408	10*16071	L	9-12-30	JOHN P HOLMES AND DEBRA A HOLMES	905 582
409	10*16071	L	9-12-30	JOHN F ORSWELL AND CATHERINE A ORSWELL	927 37
410	10*16071	L	9-12-30	JOHN WILLIAMSON JR	904 596
411	10*16071	L	9-12-30	JOSUEF STARK JR AND DONNA STARK	905 569
412	10*16071	L	9-12-30	JOSEPH PAUL FOX AND MARGARET FOX	918 223
413	10*16071	L	9-12-30	JOSIE W SEASMAN	926 631
414	10*16071	L	9-12-30	JUDITH C GIBSON	905 417
415	10*16071	L	9-12-30	JUDITH E TEMBLE AND LOUIS I TEMBLE	904 895
416	10*16071	L	9-12-30	KAREN YVON CAMPBELL	904 520
417	10*16071	L	9-12-30	KAREN I ZUCKER AND MICHAEL ZUCKER	905 632
418	10*16071	L	9-12-30	KATHLEEN R DANIEL DEGROIT	927 218
419	10*16071	L	9-12-30	KATHLEEN D AND STEVEN MORGOLD	906 35
420	10*16071	L	9-12-30	KATHLEEN REE LY MANIX AND J MICHAEL MANIX	917 328
421	10*16071	L	9-12-30	KARLYN BROWN AND BRUCE G BROWN	926 641
422	10*16071	L	9-12-30	KATHLEEN W STORCH AND DEBORAH A STORCH	905 624
423	10*16071	L	9-12-30	LAWRENCE CLARK	927 13
424	10*16071	L	9-12-30	LARRY W ALLEY	927 39
425	10*16071	L	9-12-30	LINDA K AND MICHAEL BRIMS	906 17
426	10*16071	L	9-12-30	LISA R HODGE AND VALERIE HODGE SR	905 616
427	10*16071	L	9-12-30	LISA R HODGE AND CRAIG HODGE	905 638
428	10*16071	L	9-12-30	OLA F BLEWIS	904 524
429	10*16071	L	9-12-30	LORENE GAIL STARK HONER AND CHARLES HONER	927 9
430	10*16071	L	9-12-30	LORI A FARMER AND DANIEL F FARMER	909 73
431	10*16071	L	9-12-30	LUCAS M AND WILSON D MCLENNAN	903 512
432	10*16071	L	9-12-30	LAURENCE CARTER	905 589
433	10*16071	L	9-12-30	MARSHALL D GIBSON AND JONATHAN D GIBSON	904 50
434	10*16071	L	9-12-30	MARIE B BAYLER	924 952
435	10*16071	L	9-12-30	MARIE H HARM	905 257
436	10*16071	L	9-12-30	MARY ELISE CAMP	921 44
437	10*16071	L	9-12-30	MARY MORRIS	906 29
438	10*16071	L	9-12-30	MELBA R AUSTIN AND ANTHONY B POWERS	906 26
439	10*16071	L	9-12-30	MELBA M GREENOUGH AND DOUGLAS EDWIN GREENOUGH	927 39
440	10*16071	L	9-12-30	MICHAEL SAUERS AND AAR SAUERS	904 622
441	10*16071	L	9-12-30	MICHAEL WAYNE ALLEY AND LINDA ALLEY	905 550
442	10*16071	L	9-12-30	NANCY MARIE DUNN AND GEORGE L DUNN	906 56
443	10*16071	L	9-12-30	NANETTE BERBETH AND MATTHEWS BERBETH JR	913 40
444	10*16071	L	9-12-30	NATHAN AND KATHY KOHMAN	905 502
445	10*16071	L	9-12-30	PATRICIA WILSON	906 37
446	10*16071	L	9-12-30	PEGGY ZORIMANN AND DAVID FOJMAN	913 323
447	10*16071	L	9-12-30	PERRY N AND JAMES E GLASS	905 428
448	10*16071	L	9-12-30	PETER G STORCH AND LAURIE STORCH	926 626
449	10*16071	L	9-12-30	RACHEL AND FRED THORNE JR	904 535
450	10*16071	L	9-12-30	RANDY W MORRIS AND CHEVIE MORRIS	906 44
451	10*16071	L	9-12-30	RAYMOND P BIRK AND GAYLE BIRK	904 598
452	10*16071	L	9-12-30	REG O MILLER AND LETHA MILLER	905 630
453	10*16071	L	9-12-30	RENEE L PALASOTA AND SAMIA PALASOTA	904 604
454	10*16071	L	9-12-30	RENEE L PALASOTA	906 41
455	10*16071	L	9-12-30	ROBERT E BANE & CARRIE J BANE	905 630
456	10*16071	L	9-12-30	ROSELLA M MORAN AND WILLARD L MORAN	905 644
457	10*16071	L	9-12-30	ROSEMARY McSPORO	905 648
458	10*16071	L	9-12-30	SALLY MERRICK	905 672
459	10*16071	L	9-12-30	SANDRA SEE HALE AND DAVID HALE	905 674
460	10*16071	L	9-12-30	SHARLA ROLLINS AND GARY ROLLINS	904 537
461	10*16071	L	9-12-30	SHAWN KELLER JERRY KELLER JR	905 606
462	10*16071	L	9-12-30	SUELA SIMMONS	905 448
463	10*16071	L	9-12-30	SURWOOD MASON NEILA BINE MASON	927 16
464	10*16071	L	9-12-30	STACY L BARNHART	905 506
465	10*16071	L	9-12-30	STACY R BENNETT	905 638
466	10*16071	L	9-12-30	STEVEN P BENNETT	905 596
467	10*16071	L	9-12-30	SUSAN BANE	905 638
468	10*16071	L	9-12-30	TARA E CAUSEY	905 596
469	10*16071	L	9-12-30	THE BENNETT TRUSTHOLDERS GARVEY IVING TRUST DATED OCTOBER 8TH 2013	926 631
470	10*16071	L	9-12-30	THE TESTAMENTARY TRUST OF EBBY B BANE JR	919 252

No.	Lease Name or No.	Tag	Percent	Oil & Gas Royalty Owner - Continued	Deed Book/Page
471	10*16071	L	9-12-30	THELMA W BROWNE	906 9
472	10*16071	L	9-12-30	THELMA LEE COLLEY	906 13
473	10*16071	L	9-12-30	THEM ALLEY	905 644
474	10*16071	L	9-12-30	TRACEY RAND	906 4
475	10*16071	L	9-12-30	VICTOR E ALLEY JR AND DENNA A ALLEY	926 647
476	10*16071	L	9-12-30	VIRGINIA ELISE RESTRAM	921 379
477	10*16071	L	9-12-30	WILLIAM BIRNBAUM	913 628
478	10*16071	L	9-12-30	WILLIAM F WINKLER AND IDIAN BEED SWART	905 638
479	10*16071	L	9-12-30	WILLIAM RICHARD FOX	905 561
480	10*16071	L	9-12-30	WILLIAM T AND BARBARA WPALE	919 252
481	10*16071	M	9-12-30	SAN GRAMES SIMMACHER LEONARD A SIMMACHER	904 472
482	10*16071	N	9-12-30	EMILY ANN NICOLSON	924 617
483	10*16071	N	9-12-30	WAYHURST COMPANY A FLORIDA PARTNERSHIP	227 253
484	10*16071	N	9-12-30	THOMAS MICHAEL WPALE	924 610
485	10*16071	N	9-12-30	THOMAS S BRIGGS JR	904 555
486	10*16071	N	9-12-30	WILLIAM MARTIN BIGGS ANGELA RAE MOORE	907 220
487	10*16071	O	9-12-30	DAVID P CHAPMAN & DEBORAH BOBCH-CHAPMAN	905 215
488	10*16071	O	9-12-30	DOROTHY SULLIVAN FOR JAMES RED SKILVAN	873 308

FILE NO. 8654P8HUR2.dwg
 DATE AUGUST 25, 20 17
 REVISED JANUARY 25, 2018 & JANUARY 29, 2018
 OPERATORS WELL NO. HEAVEN HILL 3-8HU
 API WELL NO. 47
 STATE 051 COUNTY 01967 PERMIT H6A



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 COUNTY NAME
 PERMIT
 P.S. 677
Gregory A. Smith
 03/02/2018

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

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
*See attached 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 - 8HU

51-01967

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15557	A	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	B	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	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*15655	D	9-7-22	ANNA EMERSON A/K/A ANNIE ASTON	CHEVRON U.S.A. INC.	1/8+	864 603	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	D	9-7-22	BRENDA J WHETZEL	CHEVRON USA INC	1/8+	863 635	N/A	N/A	Chevron to Tug Hill: 36/148
10*15618	D	9-7-22	CHARLES A RINE	CHEVRON U.S.A. INC.	1/8+	835 22	N/A	N/A	Chevron to Tug Hill: 36/148
10*15629	D	9-7-22	DANIEL L RINE	CHEVRON U.S.A. INC.	1/8+	860 86	N/A	N/A	Chevron to Tug Hill: 36/148
10*15614	D	9-7-22	DAVID F RINE	CHEVRON U.S.A. INC.	1/8+	837 130	N/A	N/A	Chevron to Tug Hill: 36/148
10*15631	D	9-7-22	DAVID HEINZEROTH	CHEVRON U.S.A. INC.	1/8+	836 219	N/A	N/A	Chevron to Tug Hill: 36/148
10*15639	D	9-7-22	DELLA M BURKEY A/K/A MAXINE ASTON	CHEVRON U.S.A. INC.	1/8+	848 435	N/A	N/A	Chevron to Tug Hill: 36/148
10*15673	D	9-7-22	DIANE B ASTON	CHEVRON U.S.A. INC.	1/8+	864 595	N/A	N/A	Chevron to Tug Hill: 36/148
10*15637	D	9-7-22	DONALD ASTON	CHEVRON U.S.A. INC.	1/8+	848 274	N/A	N/A	Chevron to Tug Hill: 36/148
10*15660	D	9-7-22	DOUGLAS PAUL HENCEROTH BY HIS AIF	CHEVRON U.S.A. INC.	1/8+	871 193	N/A	N/A	Chevron to Tug Hill: 36/148
10*15635	D	9-7-22	ELLEN L BETTINAZZI	CHEVRON U.S.A. INC.	1/8+	847 496	N/A	N/A	Chevron to Tug Hill: 36/148
10*15653	D	9-7-22	EMILY M HENCEROTH	CHEVRON U.S.A. INC.	1/8+	862 574	N/A	N/A	Chevron to Tug Hill: 36/148
10*15640	D	9-7-22	EMMA JANE DAVIS A/K/A EMA ASTON	CHEVRON U.S.A. INC.	1/8+	848 271	N/A	N/A	Chevron to Tug Hill: 36/148
10*15654	D	9-7-22	GEORGE E HENNIGER	CHEVRON U.S.A. INC.	1/8+	863 612	N/A	N/A	Chevron to Tug Hill: 36/148
10*15617	D	9-7-22	GLADYS M RINE	CHEVRON U.S.A. INC.	1/8+	836 329	N/A	N/A	Chevron to Tug Hill: 36/148
10*15620	D	9-7-22	GLADYS RUCKMAN	CHEVRON U.S.A. INC.	1/8+	840 319	N/A	N/A	Chevron to Tug Hill: 36/148
10*15658	D	9-7-22	GLEN MATTHEW LAUGHTON	CHEVRON USA INC	1/8+	873 324	N/A	N/A	Chevron to Tug Hill: 36/148
10*15641	D	9-7-22	HENRY W ASTON	CHEVRON U.S.A. INC.	1/8+	847 138	N/A	N/A	Chevron to Tug Hill: 36/148
10*15652	D	9-7-22	ISAAC R ASTON A/K/A IKE ASTON	CHEVRON U.S.A. INC.	1/8+	886 136	N/A	N/A	Chevron to Tug Hill: 36/148
10*15634	D	9-7-22	JAMES W DAYTON	CHEVRON U.S.A. INC.	1/8+	847 567	N/A	N/A	Chevron to Tug Hill: 36/148
10*15630	D	9-7-22	JANE L HELFER	CHEVRON U.S.A. INC.	1/8+	836 342	N/A	N/A	Chevron to Tug Hill: 36/148
10*15679	D	9-7-22	CARA BONAR FREESE AND GEORGE H FREESE	TH EXPLORATION LLC	1/8+	905 481	N/A	N/A	N/A
10*15748	D	9-7-22	CAROLYN LEE FUREY AND MARTIN J FUREY	TH EXPLORATION LLC	1/8+	905 495	N/A	N/A	N/A
10*15622	D	9-7-22	JAY LEROY RINE	CHEVRON U.S.A. INC.	1/8+	840 351	N/A	N/A	Chevron to Tug Hill: 36/148
10*16389	D	9-7-22	CHARLES BERRY	TH EXPLORATION LLC	1/8+	905 508	N/A	N/A	N/A
10*16287	D	9-7-22	CHARLINE M ENGLE AND KEVIN E ENGLE	TH EXPLORATION LLC	1/8+	905 534	N/A	N/A	N/A
10*16585	D	9-7-22	DALE BRIAN GOODMAN	TH EXPLORATION LLC	1/8+	909 506	N/A	N/A	N/A
10*47051.295.5	D	9-7-22	DALE R MOORE	TH EXPLORATION LLC	1/8+	904 635	N/A	N/A	N/A
10*16179	D	9-7-22	DANA BERRY COPELAND	TH EXPLORATION LLC	1/8+	905 532	N/A	N/A	N/A
10*15628	D	9-7-22	JENNIFER SEAVER	CHEVRON U.S.A. INC.	1/8+	853 272	N/A	N/A	Chevron to Tug Hill: 36/148
10*17296	D	9-7-22	DANIEL W HEINZEROTH AND KATHLEEN E HEINZEROTH	TH EXPLORATION LLC	1/8+	914 528	N/A	N/A	N/A
10*16384	D	9-7-22	DANIELLE BONAR OSTER AND LOUIS MICHAEL OSTER	TH EXPLORATION LLC	1/8+	905 501	N/A	N/A	N/A
10*16049	D	9-7-22	DANNY SHAWN KERNS AND AMY LYNN KERNS	TH EXPLORATION LLC	1/8+	905 518	N/A	N/A	N/A
10*15636	D	9-7-22	JOSEPH ASTON JR BY HIS ATTORNEY-IN-FACT MELVIN J. ASTON	CHEVRON U.S.A. INC.	1/8+	848 280	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.295.10	D	9-7-22	DEENA J PALOMO	TH EXPLORATION LLC	1/8+	905 470	N/A	N/A	N/A
10*15749	D	9-7-22	DIANA SMITH KNIGHT	TH EXPLORATION LLC	1/8+	905 497	N/A	N/A	N/A
10*15646	D	9-7-22	JUDITH A CIRONE	CHEVRON USA INC	1/8+	848 428	N/A	N/A	Chevron to Tug Hill: 36/148
10*16295	D	9-7-22	DONALD H SNYDER JR AND KAREN S SNYDER	TH EXPLORATION LLC	1/8+	903 183	N/A	N/A	N/A
10*15489	D	9-7-22	DONALD T SNODGRASS AND LILA F SNODGRASS	TH EXPLORATION LLC	1/8+	915 189	N/A	N/A	N/A
10*15729	D	9-7-22	DONNA KAY ALLEN AND ROGER ALLEN	TH EXPLORATION LLC	1/8+	905 493	N/A	N/A	N/A
10*16423	D	9-7-22	GAIL L VAUGHN & LARRY VAUGHN	TH EXPLORATION LLC	1/8+	905 536	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15645	D	9-7-22	KAREN K OLDFIELD	CHEVRON U.S.A. INC.	1/8+	854 111	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.295.12	D	9-7-22	EARL D WELLMAN	TH EXPLORATION LLC	1/8+	905 432	N/A	N/A	N/A
10*16588	D	9-7-22	EDWIN M KNABENSHUE ADMINISTRATOR OF THE ESTATE OF SARAH J KNABENSHUE, DECEASED	TH EXPLORATION LLC	1/8+	907 408	N/A	N/A	N/A
10*15621	D	9-7-22	KATHERINE A STALNAKER	CHEVRON U.S.A. INC.	1/8+	840 325	N/A	N/A	Chevron to Tug Hill: 36/148
10*15642	D	9-7-22	KENNETH L DAYTON	CHEVRON U.S.A. INC.	1/8+	852 366	N/A	N/A	Chevron to Tug Hill: 36/148
10*15647	D	9-7-22	KENNETH WENDELL OLDFIELD	CHEVRON U.S.A. INC.	1/8+	861 589	N/A	N/A	Chevron to Tug Hill: 36/148
10*16571	D	9-7-22	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	907 411	N/A	N/A	N/A
10*47051.295.3	D	9-7-22	HAZEL ARIZONA MOORE REYNOLDS	TH EXPLORATION LLC	1/8+	904 632	N/A	N/A	N/A
10*15492	D	9-7-22	HEATHER WHORTON STILLION AND CHRISTOPHER STILLION	TH EXPLORATION LLC	1/8+	905 473	N/A	N/A	N/A
10*16844	D	9-7-22	HOLLY A LONGFELLOW	TH EXPLORATION LLC	1/8+	927 454	N/A	N/A	N/A
10*16719	D	9-7-22	HOWARD T CONNER AND NANETTE CONNER	TH EXPLORATION LLC	1/8+	912 37	N/A	N/A	N/A
10*47051.295.9	D	9-7-22	JAMES E HIMELRICK JR AND KAREN HIMELRICK	TH EXPLORATION LLC	1/8+	904 465	N/A	N/A	N/A
10*15662	D	9-7-22	LARRY LEE CONKLE	CHEVRON U.S.A. INC.	1/8+	863 354	N/A	N/A	Chevron to Tug Hill: 36/148
10*15625	D	9-7-22	LAWRENCE W STIRLING	CHEVRON U.S.A. INC.	1/8+	852 384	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.295.7	D	9-7-22	JEANNE V MELCHIORI	TH EXPLORATION LLC	1/8+	904 462	N/A	N/A	N/A
10*15632	D	9-7-22	MARIAN D JONES	CHEVRON U.S.A. INC.	1/8+	835 38	N/A	N/A	Chevron to Tug Hill: 36/148
10*15689	D	9-7-22	JOHN LEROY BAKER AND CYNTHIA A BAKER	TH EXPLORATION LLC	1/8+	905 491	N/A	N/A	N/A
10*15648	D	9-7-22	MARTHA CRAWFORD	CHEVRON U.S.A. INC.	1/8+	863 542	N/A	N/A	Chevron to Tug Hill: 36/148
10*16177	D	9-7-22	JOSEPHINE BROWN	TH EXPLORATION LLC	1/8+	905 530	N/A	N/A	N/A
10*15688	D	9-7-22	JOSH GARY AND CHRISTINA M GARY	TH EXPLORATION LLC	1/8+	905 487	N/A	N/A	N/A
10*15650	D	9-7-22	MARY GLADYS KUHN BY ATTORNEY IN FACT CONNIE LYONS	CHEVRON USA INC	1/8+	860 89	N/A	N/A	Chevron to Tug Hill: 36/148
10*15649	D	9-7-22	MARY JANE DANIEL	CHEVRON U.S.A. INC.	1/8+	858 28	N/A	N/A	Chevron to Tug Hill: 36/148
10*15657	D	9-7-22	MARY MARGARET ASTON	CHEVRON U.S.A. INC.	1/8+	868 283	N/A	N/A	Chevron to Tug Hill: 36/148
10*17370	D	9-7-22	KELLY JUNE GOODMAN	TH EXPLORATION LLC	1/8+	927 470	N/A	N/A	N/A
10*15609	D	9-7-22	MICHELLE R WILHELM	CHEVRON USA INC	1/8+	834 456	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.295.4	D	9-7-22	LLOYD D MOORE	TH EXPLORATION LLC	1/8+	904 459	N/A	N/A	N/A
10*16501	D	9-7-22	LLOYD DOYLE MOORE AND GWENDOLYN K MOORE	TH EXPLORATION LLC	1/8+	907 392	N/A	N/A	N/A
10*16513	D	9-7-22	LOWELL D AND JANICE L KNIGHT	TH EXPLORATION LLC	1/8+	927 458	N/A	N/A	N/A
10*15643	D	9-7-22	NORMAN G JOHNSON	CHEVRON U.S.A. INC.	1/8+	848 363	N/A	N/A	Chevron to Tug Hill: 36/148
10*16553	D	9-7-22	MARK EDWARD AND KARRIE A GOODMAN	TH EXPLORATION LLC	1/8+	909 81	N/A	N/A	N/A
10*16029	D	9-7-22	MARTHA ASHWORTH KNIGHT	TH EXPLORATION LLC	1/8+	905 505	N/A	N/A	N/A
10*15656	D	9-7-22	PATTY L MYERS	CHEVRON U.S.A. INC.	1/8+	867 100	N/A	N/A	Chevron to Tug Hill: 36/148
10*16896	D	9-7-22	MARTHA J BLACK	TH EXPLORATION LLC	1/8+	927 450	N/A	N/A	N/A
10*15638	D	9-7-22	PAUL J ASTON A/K/A JACK ASTON	CHEVRON U.S.A. INC.	1/8+	848 277	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.295.6	D	9-7-22	MARY I BURKHART	TH EXPLORATION LLC	1/8+	904 638	N/A	N/A	N/A
10*15615	D	9-7-22	PAUL WAYNE RINE	CHEVRON USA INC	1/8+	837 133	N/A	N/A	Chevron to Tug Hill: 36/148
10*16589	D	9-7-22	MARY L WHITTINGTON	TH EXPLORATION LLC	1/8+	907 400	N/A	N/A	N/A
10*15728	D	9-7-22	MARY LOU KITTELBERGER AND FREDERICK W KITTELBERGER	TH EXPLORATION LLC	1/8+	905 483	N/A	N/A	N/A
10*15627	D	9-7-22	PAULA R SEAVER	CHEVRON U.S.A. INC.	1/8+	853 483	N/A	N/A	Chevron to Tug Hill: 36/148
10*16440	D	9-7-22	MELANIE C WILKINS AND ROBERT WILKINS	TH EXPLORATION LLC	1/8+	927 462	N/A	N/A	N/A
10*15616	D	9-7-22	PHILLIP C RINE	CHEVRON U.S.A. INC.	1/8+	836 332	N/A	N/A	Chevron to Tug Hill: 36/148
10*17365	D	9-7-22	MYSTI JOANNE GOODMAN	TH EXPLORATION LLC	1/8+	927 468	N/A	N/A	N/A
10*16558	D	9-7-22	PAUL BONAR KNIGHT AND SUZANNE L HOPKINS-KNIGHT	TH EXPLORATION LLC	1/8+	927 460	N/A	N/A	N/A
10*16123	D	9-7-22	PHYLLIS R GATTO	TH EXPLORATION LLC	1/8+	905 520	N/A	N/A	N/A

SI-019167

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

S/D 1967

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.295.11	D	9-7-22	REGINA D FIGUEROA AND DAVID FIGUEROA	TH EXPLORATION LLC	1/8+	905 435	N/A	N/A	N/A
10*16426	D	9-7-22	RENE J RUTAN	TH EXPLORATION, LLC	1/8+	905 538	N/A	N/A	N/A
10*15486	D	9-7-22	RICHARD NEAL NORRIS AND CAROL NORRIS	TH EXPLORATION LLC	1/8+	905 430	N/A	N/A	N/A
10*15626	D	9-7-22	ROBERT J SEAVER	CHEVRON U.S.A. INC.	1/8+	854 77	N/A	N/A	Chevron to Tug Hill: 36/148
10*16114	D	9-7-22	ROBERT SANDFORD BLACK AND JOAN BLACK	TH EXPLORATION LLC	1/8+	905 510	N/A	N/A	N/A
10*15690	D	9-7-22	ROBERT WHORTON AND LINDSAY WHORTON	TH EXPLORATION LLC	1/8+	905 489	N/A	N/A	N/A
10*15680	D	9-7-22	ROBERTA JANE CLAYTON	TH EXPLORATION LLC	1/8+	905 485	N/A	N/A	N/A
10*16019	D	9-7-22	ROGER E GALLAGHER AND CONIE M GALLAGHER	TH EXPLORATION LLC	1/8+	905 503	N/A	N/A	N/A
10*15611	D	9-7-22	ROBERT S ZEHNDER	CHEVRON U.S.A. INC.	1/8+	834 437	N/A	N/A	Chevron to Tug Hill: 36/148
10*15633	D	9-7-22	ROGER W GATTS	CHEVRON U.S.A. INC.	1/8+	835 35	N/A	N/A	Chevron to Tug Hill: 36/148
10*15624	D	9-7-22	RONALD A ZEHNDER	CHEVRON U.S.A. INC.	1/8+	847 213	N/A	N/A	Chevron to Tug Hill: 36/148
10*15644	D	9-7-22	RONALD BEN LAUGHTON	CHEVRON U.S.A. INC.	1/8+	852 360	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	D	9-7-22	ROY A CONKLE SR	CHEVRON USA INC	1/8+	863 311	N/A	N/A	Chevron to Tug Hill: 36/148
10*15610	D	9-7-22	SARAH STEVENS	CHEVRON U.S.A. INC.	1/8+	834 432	N/A	N/A	Chevron to Tug Hill: 36/148
10*15619	D	9-7-22	SHARON M REYNOLDS	CHEVRON U.S.A. INC.	1/8+	840 322	N/A	N/A	Chevron to Tug Hill: 36/148
10*17497	D	9-7-22	SUZANNA DOOLING AND MICHAEL DOOLING	TH EXPLORATION LLC	1/8+	927 464	N/A	N/A	N/A
10*47051.295.13	D	9-7-22	THE DOLLYE F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	TH EXPLORATION LLC	1/8+	904 641	N/A	N/A	N/A
10*15623	D	9-7-22	SUSAN JANE WHEELER	CHEVRON U.S.A. INC.	1/8+	847 473	N/A	N/A	Chevron to Tug Hill: 36/148
10*15664	D	9-7-22	THERESA ANNE HUGHES	CHEVRON USA INC	1/8+	863 343	N/A	N/A	Chevron to Tug Hill: 36/148
10*15651	D	9-7-22	THOMAS G ASTON	CHEVRON U.S.A. INC.	1/8+	860 83	N/A	N/A	Chevron to Tug Hill: 36/148
10*16845	D	9-7-22	TRACY L AND KEITH W BARNBY	TH EXPLORATION LLC	1/8+	927 452	N/A	N/A	N/A
10*15613	D	9-7-22	THOMAS L STEVENS	CHEVRON U.S.A. INC.	1/8+	836 290	N/A	N/A	Chevron to Tug Hill: 36/148
10*16546	D	9-7-22	WALTER C AND CHERYL A RINE	TH EXPLORATION LLC	1/8+	927 456	N/A	N/A	N/A
10*15487	D	9-7-22	WILLIAM C RUTAN	TH EXPLORATION LLC	1/8+	905 475	N/A	N/A	N/A
10*15612	D	9-7-22	VERA SHIRLENE & ARTHUR WORKMAN	CHEVRON U.S.A. INC.	1/8+	837 361	N/A	N/A	Chevron to Tug Hill: 36/148
10*15747	D	9-7-22	WILLIAM H BAKER	TH EXPLORATION LLC	1/8+	905 499	N/A	N/A	N/A
10*16050	D	9-7-22	WILLIAM L GALLAGHER	TH EXPLORATION LLC	1/8+	905 512	N/A	N/A	N/A
10*17584	D	9-7-22	WILLIAM THOMAS BONAR AND MONICA BONAR	TH EXPLORATION LLC	1/8+	927 466	N/A	N/A	N/A
10*15659	D	9-7-22	WILLIAM E DAYTON BY HIS AIF	CHEVRON U.S.A. INC.	1/8+	871 190	N/A	N/A	Chevron to Tug Hill: 36/148
10*15662	E	9-7-24	LARRY LEE CONKLE	CHEVRON U.S.A. INC.	1/8+	863 354	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	E	9-7-24	ROY A CONKLE SR	CHEVRON USA INC	1/8+	863 311	N/A	N/A	Chevron to Tug Hill: 36/148
10*15664	E	9-7-24	THERESA ANNE HUGHES	CHEVRON USA INC	1/8+	863 343	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	E	9-7-24	BRENDA J WHETZEL	CHEVRON USA INC	1/8+	863 635	N/A	N/A	Chevron to Tug Hill: 36/148
10*16049	E	9-7-24	DANNY SHAWN KERNS AND AMY LYNN KERNS	TH EXPLORATION LLC	1/8+	905 518	N/A	N/A	N/A
10*16501	E	9-7-24	LLOYD DOYLE MOORE AND GWENDOLYN K MOORE	TH EXPLORATION LLC	1/8+	907 392	N/A	N/A	N/A
10*16553	E	9-7-24	MARK EDWARD AND KARRIE A GOODMAN	TH EXPLORATION LLC	1/8+	909 81	N/A	N/A	N/A
10*16585	E	9-7-24	DALE BRIAN GOODMAN	TH EXPLORATION LLC	1/8+	909 506	N/A	N/A	N/A
10*17365	E	9-7-24	MYSTI JOANNE GOODMAN	TH EXPLORATION LLC	1/8+	927 468	N/A	N/A	N/A
10*17370	E	9-7-24	KELLY JUNE GOODMAN	TH EXPLORATION LLC	1/8+	927 470	N/A	N/A	N/A
10*47051.295.10	E	9-7-24	DEENA J PALOMO	TH EXPLORATION LLC	1/8+	905 470	N/A	N/A	N/A
10*47051.295.11	E	9-7-24	REGINA D FIGUEROA AND DAVID FIGUEROA	TH EXPLORATION LLC	1/8+	905 435	N/A	N/A	N/A
10*47051.295.12	E	9-7-24	EARL D WELLMAN	TH EXPLORATION LLC	1/8+	905 432	N/A	N/A	N/A
10*47051.295.13	E	9-7-24	THE DOLLYE F WOOD REVOCABLE TRUST BY NICHOLAS CHARLES WOOD AS TRUSTEE	TH EXPLORATION LLC	1/8+	904 641	N/A	N/A	N/A
10*47051.295.3	E	9-7-24	HAZEL ARIZONA MOORE REYNOLDS	TH EXPLORATION LLC	1/8+	904 632	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

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10*47051.295.4	E	9-7-24	LLOYD D MOORE	TH EXPLORATION LLC	1/8+	904 459	N/A	N/A	N/A
10*47051.295.5	E	9-7-24	DALE R MOORE	TH EXPLORATION LLC	1/8+	904 635	N/A	N/A	N/A
10*47051.295.6	E	9-7-24	MARY I BURKHART	TH EXPLORATION LLC	1/8+	904 638	N/A	N/A	N/A
10*47051.295.7	E	9-7-24	JEANNE V MELCHIORI	TH EXPLORATION LLC	1/8+	904 462	N/A	N/A	N/A
10*47051.295.9	E	9-7-24	JAMES E HIMELRICK JR AND KAREN HIMELRICK	TH EXPLORATION LLC	1/8+	904 465	N/A	N/A	N/A
10*47051.256.22	F	9-7-23	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A
10*47051.256.1	F	9-7-23	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*15746	F	9-7-23	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A
10*16247	F	9-7-23	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925 327	N/A	N/A	N/A
10*47051.256.24	F	9-7-23	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A
10*47051.256.16	F	9-7-23	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A
10*47051.256.15	F	9-7-23	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A
10*17506	F	9-7-23	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919 239	N/A	N/A	N/A
10*17507	F	9-7-23	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A
10*17415	F	9-7-23	DILLON PITSENBERGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A
10*16115	F	9-7-23	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A
10*47051.256.10	F	9-7-23	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A
10*47051.256.14	F	9-7-23	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A
10*47051.256.21	F	9-7-23	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904 626	N/A	N/A	N/A
10*47051.256.20	F	9-7-23	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907 209	N/A	N/A	N/A
10*47051.256.11	F	9-7-23	JOHN L MASON	TH EXPLORATION LLC	1/8+	905 37	N/A	N/A	N/A
10*47051.256.18	F	9-7-23	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913 522	N/A	N/A	N/A
10*47051.256.7	F	9-7-23	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905 29	N/A	N/A	N/A
10*47051.256.17	F	9-7-23	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904 457	N/A	N/A	N/A
10*47051.256.19	F	9-7-23	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907 207	N/A	N/A	N/A
10*47051.256.8	F	9-7-23	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905 31	N/A	N/A	N/A
10*47051.256.23	F	9-7-23	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913 556	N/A	N/A	N/A
10*47051.256.12	F	9-7-23	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905 39	N/A	N/A	N/A
10*16021	F	9-7-23	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925 325	N/A	N/A	N/A
10*47051.256.9	F	9-7-23	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905 33	N/A	N/A	N/A
10*47051.256.13	F	9-7-23	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905 41	N/A	N/A	N/A
10*47051.256.22	G	9-11-7	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913 581	N/A	N/A	N/A
10*47051.256.1	G	9-11-7	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881 145	N/A	N/A	N/A
10*15746	G	9-11-7	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921 478	N/A	N/A	N/A
10*16247	G	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	G	9-11-7	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904 628	N/A	N/A	N/A
10*47051.256.16	G	9-11-7	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905 45	N/A	N/A	N/A
10*47051.256.15	G	9-11-7	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904 455	N/A	N/A	N/A
10*17506	G	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	G	9-11-7	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919 235	N/A	N/A	N/A
10*17415	G	9-11-7	DILLON PITSENBERGER	TH EXPLORATION LLC	1/8+	919 241	N/A	N/A	N/A
10*16115	G	9-11-7	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925 329	N/A	N/A	N/A
10*47051.256.10	G	9-11-7	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905 35	N/A	N/A	N/A
10*47051.256.14	G	9-11-7	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905 43	N/A	N/A	N/A

51-01967

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.256.21	G	9-11-7	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904	626	N/A	N/A
10*47051.256.20	G	9-11-7	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907	209	N/A	N/A
10*47051.256.11	G	9-11-7	JOHN L MASON	TH EXPLORATION LLC	1/8+	905	37	N/A	N/A
10*47051.256.18	G	9-11-7	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913	522	N/A	N/A
10*47051.256.7	G	9-11-7	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905	29	N/A	N/A
10*47051.256.17	G	9-11-7	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904	457	N/A	N/A
10*47051.256.19	G	9-11-7	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907	207	N/A	N/A
10*47051.256.8	G	9-11-7	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905	31	N/A	N/A
10*47051.256.23	G	9-11-7	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913	556	N/A	N/A
10*47051.256.12	G	9-11-7	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905	39	N/A	N/A
10*16021	G	9-11-7	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925	325	N/A	N/A
10*47051.256.9	G	9-11-7	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905	33	N/A	N/A
10*47051.256.13	G	9-11-7	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905	41	N/A	N/A
10*47051.256.22	H	9-11-7.1	BEVERLY J HOPSON	TH EXPLORATION LLC	1/8+	913	581	N/A	N/A
10*47051.256.1	H	9-11-7.1	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	881	145	N/A	N/A
10*15746	H	9-11-7.1	BRUCE D SCHURR	TH EXPLORATION LLC	1/8+	921	478	N/A	N/A
10*16247	H	9-11-7.1	CAROL RIGGLE PARSLEY AND JAMES DENNIS PARSLEY	TH EXPLORATION LLC	1/8+	925	327	N/A	N/A
10*47051.256.24	H	9-11-7.1	CATHERINE BONAR PETTIT BILLIE	TH EXPLORATION LLC	1/8+	904	628	N/A	N/A
10*47051.256.16	H	9-11-7.1	CHARLOTTE B HUMMELL	TH EXPLORATION LLC	1/8+	905	45	N/A	N/A
10*47051.256.15	H	9-11-7.1	CHARLOTTE J BONAR YOHO	TH EXPLORATION LLC	1/8+	904	455	N/A	N/A
10*17506	H	9-11-7.1	CHASKIA F HARRIS AND JAMES M HARRIS	TH EXPLORATION LLC	1/8+	919	239	N/A	N/A
10*17507	H	9-11-7.1	DEZRAY METCALF	TH EXPLORATION LLC	1/8+	919	235	N/A	N/A
10*17415	H	9-11-7.1	DILLON PITSENBERGER	TH EXPLORATION LLC	1/8+	919	241	N/A	N/A
10*16115	H	9-11-7.1	EARL W HARRIS	TH EXPLORATION LLC	1/8+	925	329	N/A	N/A
10*47051.256.10	H	9-11-7.1	GRACE LAURA BONAR	TH EXPLORATION LLC	1/8+	905	35	N/A	N/A
10*47051.256.14	H	9-11-7.1	HUGH R BUZZARD	TH EXPLORATION LLC	1/8+	905	43	N/A	N/A
10*47051.256.21	H	9-11-7.1	JACK L MASON AND JEAN M MASON	TH EXPLORATION LLC	1/8+	904	626	N/A	N/A
10*47051.256.20	H	9-11-7.1	JEFFREY THOMAS PYLES AND TERESA A PYLES	TH EXPLORATION LLC	1/8+	907	209	N/A	N/A
10*47051.256.11	H	9-11-7.1	JOHN L MASON	TH EXPLORATION LLC	1/8+	905	37	N/A	N/A
10*47051.256.18	H	9-11-7.1	JOHN WILLIAM BONAR AND SHIRLEY BONAR	TH EXPLORATION LLC	1/8+	913	522	N/A	N/A
10*47051.256.7	H	9-11-7.1	MARILYN SUE BUMER	TH EXPLORATION LLC	1/8+	905	29	N/A	N/A
10*47051.256.17	H	9-11-7.1	MAXINE G JOHNSON	TH EXPLORATION LLC	1/8+	904	457	N/A	N/A
10*47051.256.19	H	9-11-7.1	MICHAEL DAVID PYLES AND CYNTHIA A PYLES	TH EXPLORATION LLC	1/8+	907	207	N/A	N/A
10*47051.256.8	H	9-11-7.1	PAMELA ANN MASON	TH EXPLORATION LLC	1/8+	905	31	N/A	N/A
10*47051.256.23	H	9-11-7.1	ROBERT L BONAR	TH EXPLORATION LLC	1/8+	913	556	N/A	N/A
10*47051.256.12	H	9-11-7.1	STEVEN A BOHRER	TH EXPLORATION LLC	1/8+	905	39	N/A	N/A
10*16021	H	9-11-7.1	TOMMY BONAR AND TANYA S BONAR	TH EXPLORATION LLC	1/8+	925	325	N/A	N/A
10*47051.256.9	H	9-11-7.1	WANDA MASON SUNSHINE	TH EXPLORATION LLC	1/8+	905	33	N/A	N/A
10*47051.256.13	H	9-11-7.1	WILLIAM W CRAIG AND GLENDA L CRAIG	TH EXPLORATION LLC	1/8+	905	41	N/A	N/A
10*16932	I	9-12-2	HAYMAKER PROPERTIES LP	CHEVRON U.S.A. INC.	1/8+	902	447	N/A	N/A
10*15606	I	9-12-2	CHK-MAC LLC	CHESAPEAKE APPALACHIA LLC	1/8+	798	150	N/A	Chesapeake to Chevron: 30/461
10*47051.309.3	I	9-12-2	GERALD W QUIGLEY AND VICKI L QUIGLEY	TH EXPLORATION LLC	1/8+	905	12	N/A	N/A
10*47051.309.1	I	9-12-2	LESLIE E QUIGLEY	TH EXPLORATION LLC	1/8+	905	8	N/A	N/A
10*47051.309.2	I	9-12-2	LEWIS M QUIGLEY AND MAXINE V QUIGLEY	TH EXPLORATION LLC	1/8+	907	217	N/A	N/A

51-01967

Chevron to Tug Hill: 37/437
 Chevron to Tug Hill: 36/148

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
51-01967 10*16238	I	9-12-2	SUSAN MARIE JOHNSON AKA SUSAN MARIE HUBER	TH EXPLORATION LLC	1/8+	924 614	N/A	N/A	N/A
10*16514	J	9-11-8	ALEX RUSSELL AND JOYCE A CAMPBELL	TH EXPLORATION LLC	1/8+	908 248	N/A	N/A	N/A
10*47051.223.12	J	9-11-8	ALICE GORBY MARTIN	TH EXPLORATION LLC	1/8+	908 52	N/A	N/A	N/A
10*17416	J	9-11-8	ANDREW M. ORTIZ	TH EXPLORATION, LLC	1/8+	921 346	N/A	N/A	N/A
10*16515	J	9-11-8	ANNA MARIE JACKSON	TH EXPLORATION LLC	1/8+	908 251	N/A	N/A	N/A
10*47051.223.20	J	9-11-8	BARBARA A BUZZARD	TH EXPLORATION LLC	1/8+	908 24	N/A	N/A	N/A
10*17276	J	9-11-8	BERTHA EZELL WYATT	TH EXPLORATION LLC	1/8+	921 526	N/A	N/A	N/A
10*47051.223.16	J	9-11-8	BETTY LOU STERN AND WILLIAM KEITH STERN	TH EXPLORATION LLC	1/8+	908 64	N/A	N/A	N/A
10*16880	J	9-11-8	BEVERLY ANN STORTS	TH EXPLORATION LLC	1/8+	921 498	N/A	N/A	N/A
10*16989	J	9-11-8	BRITTANY RICHARDSON	TH EXPLORATION LLC	1/8+	921 376	N/A	N/A	N/A
10*47051.223.18	J	9-11-8	BRITTNEY MENEAR	TH EXPLORATION LLC	1/8+	908 57	N/A	N/A	N/A
10*15463	J	9-11-8	CHARLES A RINE	TH EXPLORATION LLC	1/8+	908 274	N/A	N/A	N/A
10*16667	J	9-11-8	CHARLES F AND GAIL ANN PYLE	TH EXPLORATION LLC	1/8+	908 266	N/A	N/A	N/A
10*16686	J	9-11-8	CHERYLE M TRACEY	TH EXPLORATION LLC	1/8+	927 475	N/A	N/A	N/A
10*16802	J	9-11-8	CHRISTOPHER AND TAMMY RICHARDSON	TH EXPLORATION LLC	1/8+	921 495	N/A	N/A	N/A
10*17130	J	9-11-8	CINDY L BARGER	TH EXPLORATION, LLC	1/8+	921 137	N/A	N/A	N/A
10*16416	J	9-11-8	CYNTHIA HUDSON	TH EXPLORATION, LLC	1/8+	908 219	N/A	N/A	N/A
10*17274	J	9-11-8	DAVID H WILSON	TH EXPLORATION LLC	1/8+	921 474	N/A	N/A	N/A
10*47051.223.8	J	9-11-8	DAVID M WILSON	TH EXPLORATION LLC	1/8+	907 649	N/A	N/A	N/A
10*16807	J	9-11-8	DAVID TULLER AND SUSAN STORTS TULLER	TH EXPLORATION LLC	1/8+	921 513	N/A	N/A	N/A
10*15481	J	9-11-8	DEAN P RIGBY AND SUSAN RIGBY	TH EXPLORATION LLC	1/8+	908 197	N/A	N/A	N/A
10*47051.223.35	J	9-11-8	DEBRA L CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 192	N/A	N/A	N/A
10*17438	J	9-11-8	DENNIS M WILSON	TH EXPLORATION LLC	1/8+	921 476	N/A	N/A	N/A
10*16962	J	9-11-8	DENNIS P AND BARBARA EZELL FLORY	TH EXPLORATION LLC	1/8+	921 70	N/A	N/A	N/A
10*16720	J	9-11-8	DONNA ELAINE BRASKETT	TH EXPLORATION LLC	1/8+	921 152	N/A	N/A	N/A
10*47051.223.11	J	9-11-8	ELIZABETH ESTEP	TH EXPLORATION LLC	1/8+	908 39	N/A	N/A	N/A
10*47051.223.21	J	9-11-8	GARY T WARD AND SHARON D WARD	TH EXPLORATION LLC	1/8+	908 19	N/A	N/A	N/A
10*16298	J	9-11-8	GEOFFREY A SHIEFER AND STEPHANIE L SCHIEFER	TH EXPLORATION LLC	1/8+	908 238	N/A	N/A	N/A
10*17677	J	9-11-8	GEORGE M GONTA JR	TH EXPLORATION, LLC	1/8+	921 89	N/A	N/A	N/A
10*47051.223.5	J	9-11-8	HAROLD S BROWN II AND MARIA A BROWN	TH EXPLORATION LLC	1/8+	907 641	N/A	N/A	N/A
10*16815	J	9-11-8	HAROLD W PYLE	TH EXPLORATION LLC	1/8+	921 357	N/A	N/A	N/A
10*17156	J	9-11-8	HENRI NELL JACKSON KENT BARNES	TH EXPLORATION LLC	1/8+	921 139	N/A	N/A	N/A
10*16668	J	9-11-8	JACK I AND MERRILEE PYLE	TH EXPLORATION LLC	1/8+	908 257	N/A	N/A	N/A
10*47051.223.7	J	9-11-8	JACK R WILSON JR AND JANE A WILSON	TH EXPLORATION LLC	1/8+	908 4	N/A	N/A	N/A
10*47051.223.13	J	9-11-8	JAMES A GORBY	TH EXPLORATION LLC	1/8+	908 42	N/A	N/A	N/A
10*16839	J	9-11-8	JAMES B FOUNDS AND LYNN M MOWERY	TH EXPLORATION LLC	1/8+	921 73	N/A	N/A	N/A
10*16800	J	9-11-8	JAMES KENNETH JACKSON AND JULIE JACKSON	TH EXPLORATION LLC	1/8+	921 93	N/A	N/A	N/A
10*17588	J	9-11-8	JAMES M JACKSON	TH EXPLORATION LLC	1/8+	921 325	N/A	N/A	N/A
10*17527	J	9-11-8	JAMES MICHAEL EZELL AND LUCILLE D EZELL	TH EXPLORATION LLC	1/8+	921 111	N/A	N/A	N/A
10*17157	J	9-11-8	JAMES N REEVES JR AND RITA M REEVES	TH EXPLORATION LLC	1/8+	921 367	N/A	N/A	N/A
10*17564	J	9-11-8	JAMES R & TRACEY E NICKOLSON	TH EXPLORATION, LLC	1/8+	921 340	N/A	N/A	N/A
10*47051.223.31	J	9-11-8	JANICE M GONTA GAVALIK	TH EXPLORATION LLC	1/8+	908 180	N/A	N/A	N/A
10*47051.223.19	J	9-11-8	JASON RINE AND HEATHER RINE	TH EXPLORATION LLC	1/8+	907 629	N/A	N/A	N/A
10*47051.223.1	J	9-11-8	JEAN ANNE GORBY STORCH	TH EXPLORATION LLC	1/8+	877 216	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*17526	J	9-11-8	JEFFREY L REEVES AND JODY L REEVES	TH EXPLORATION LLC	1/8+	921 370	N/A	N/A	N/A
10*16977	J	9-11-8	JEREMY COCHENOUR	TH EXPLORATION LLC	1/8+	921 102	N/A	N/A	N/A
10*17565	J	9-11-8	JESSE ALLEN JACKSON AND ELIZABETH D JACKSON	TH EXPLORATION LLC	1/8+	921 327	N/A	N/A	N/A
10*17155	J	9-11-8	JESSE LEON JR AND TERESA GAIL EZELLE	TH EXPLORATION LLC	1/8+	921 118	N/A	N/A	N/A
10*47051.223.24	J	9-11-8	JO DEE K DAVIS	TH EXPLORATION LLC	1/8+	908 136	N/A	N/A	N/A
10*47051.223.25	J	9-11-8	JOANNE WELCH	TH EXPLORATION LLC	1/8+	908 141	N/A	N/A	N/A
10*17552	J	9-11-8	JOHN BEVACQUA AND PATRICIA A BEVACQUA	TH EXPLORATION LLC	1/8+	921 144	N/A	N/A	N/A
10*16689	J	9-11-8	JOHN C FOUNDS	TH EXPLORATION LLC	1/8+	927 478	N/A	N/A	N/A
10*47051.223.34	J	9-11-8	JOHN CIAFFAGLIONE	TH EXPLORATION LLC	1/8+	908 170	N/A	N/A	N/A
10*15686	J	9-11-8	JOHN OMER BOLTZ	TH EXPLORATION LLC	1/8+	908 160	N/A	N/A	N/A
10*17275	J	9-11-8	JOHN R REEVES AND MONA G REEVES	TH EXPLORATION LLC	1/8+	921 373	N/A	N/A	N/A
10*16669	J	9-11-8	JOHN S AND PATRICIA S DADO	TH EXPLORATION LLC	1/8+	908 269	N/A	N/A	N/A
10*47051.223.32	J	9-11-8	JOSEPH GORBY DAKAN	TH EXPLORATION LLC	1/8+	908 175	N/A	N/A	N/A
10*17339	J	9-11-8	JOSEPH W FOUNDS	TH EXPLORATION LLC	1/8+	921 76	N/A	N/A	N/A
10*47051.223.6	J	9-11-8	JOSHUA RINE AND REBECCA RINE	TH EXPLORATION LLC	1/8+	907 634	N/A	N/A	N/A
10*47051.223.14	J	9-11-8	JUSTIN RINE AND BECKY RINE	TH EXPLORATION LLC	1/8+	907 639	N/A	N/A	N/A
10*47051.223.28	J	9-11-8	KAREN S GAST	TH EXPLORATION LLC	1/8+	908 150	N/A	N/A	N/A
10*17561	J	9-11-8	KATHRYN L & ROGER L TYRELL	TH EXPLORATION, LLC	1/8+	921 519	N/A	N/A	N/A
10*17444	J	9-11-8	KELLY FOUNDS CAMPBELL	TH EXPLORATION LLC	1/8+	921 99	N/A	N/A	N/A
10*17440	J	9-11-8	KENDRA WALISA	TH EXPLORATION LLC	1/8+	927 484	N/A	N/A	N/A
10*47051.223.15	J	9-11-8	LARRY D TAUNT AND NANCY L TAUNT	TH EXPLORATION LLC	1/8+	908 14	N/A	N/A	N/A
10*47051.223.30	J	9-11-8	LAURIE DRIGGERS MANDERSON	TH EXPLORATION LLC	1/8+	908 165	N/A	N/A	N/A
10*16987	J	9-11-8	LAURIE EZELL PERRY	TH EXPLORATION LLC	1/8+	921 355	N/A	N/A	N/A
10*16976	J	9-11-8	LESTER G AND CONSTANCE B NICKOLSON	TH EXPLORATION LLC	1/8+	921 343	N/A	N/A	N/A
10*47051.223.9	J	9-11-8	LINDA DELBERT	TH EXPLORATION LLC	1/8+	908 32	N/A	N/A	N/A
10*17485	J	9-11-8	MARGIE ANN JACKSON ROBBINS GRAHAM	TH EXPLORATION LLC	1/8+	921 91	N/A	N/A	N/A
10*16478	J	9-11-8	MARION L AND EMILY CAMPBELL	TH EXPLORATION LLC	1/8+	908 245	N/A	N/A	N/A
10*16879	J	9-11-8	MARK E AND LESLEY A STORTS	TH EXPLORATION LLC	1/8+	921 501	N/A	N/A	N/A
10*16902	J	9-11-8	MARY BARCAW DUKE	TH EXPLORATION LLC	1/8+	921 105	N/A	N/A	N/A
10*17589	J	9-11-8	MARY CHRISTINE MCKENNA	TH EXPLORATION, LLC	1/8+	921 332	N/A	N/A	N/A
10*16414	J	9-11-8	MARY ELIZABETH DRIGGERS	TH EXPLORATION, LCC	1/8+	908 208	N/A	N/A	N/A
10*16991	J	9-11-8	MARYELLEN FOUNDS AND LAUREN FOUNDS	TH EXPLORATION LLC	1/8+	921 79	N/A	N/A	N/A
10*16058	J	9-11-8	MATTIE RUTH JACKSON PRESCOTT	TH EXPLORATION LLC	1/8+	908 231	N/A	N/A	N/A
10*17278	J	9-11-8	MICHAEL L EZELLE	TH EXPLORATION LLC	1/8+	921 121	N/A	N/A	N/A
10*16808	J	9-11-8	MICHAEL L ORTIZ	TH EXPLORATION LLC	1/8+	921 349	N/A	N/A	N/A
10*16666	J	9-11-8	MICHAEL P PYLE	TH EXPLORATION LLC	1/8+	908 255	N/A	N/A	N/A
10*17554	J	9-11-8	MICHAEL T RANKIN	TH EXPLORATION LLC	1/8+	921 361	N/A	N/A	N/A
10*16868	J	9-11-8	MICHAEL W STORTS AND JESSICA M STORTS	TH EXPLORATION LLC	1/8+	921 504	N/A	N/A	N/A
10*17443	J	9-11-8	MICHELLE MORROW-BACK	TH EXPLORATION LLC	1/8+	921 337	N/A	N/A	N/A
10*17377	J	9-11-8	MILTON HOWARD EZELLE JR AND ELIZABETH A EZELLE	TH EXPLORATION LLC	1/8+	921 123	N/A	N/A	N/A
10*47051.223.33	J	9-11-8	NANCY CIAFFAGLIONE HOUSLEY	TH EXPLORATION LLC	1/8+	908 185	N/A	N/A	N/A
10*17566	J	9-11-8	NATHAN P & BARBARA T ERDOSSY	TH EXPLORATION, LLC	1/8+	921 108	N/A	N/A	N/A
10*17484	J	9-11-8	NELDA S JACKSON	TH EXPLORATION LLC	1/8+	921 330	N/A	N/A	N/A
10*16798	J	9-11-8	PATRICK A RANKIN AND ROBIN A RANKIN	TH EXPLORATION LLC	1/8+	921 364	N/A	N/A	N/A

51-01967

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*17208	J	9-11-8	PATRICK S GALLAGHER AND JOYCE ANN FOUNDS	TH EXPLORATION LLC	1/8+	921 86	N/A	N/A	N/A
10*47051.223.29	J	9-11-8	PATSY JO RAJU	TH EXPLORATION LLC	1/8+	908 155	N/A	N/A	N/A
10*16742	J	9-11-8	PAUL C WILSON	TH EXPLORATION LLC	1/8+	927 490	N/A	N/A	N/A
10*17449	J	9-11-8	PHYLLIS J BLAKE	TH EXPLORATION LLC	1/8+	921 150	N/A	N/A	N/A
10*47051.223.17	J	9-11-8	RALPH E HUNTER JR AND CHARLOTTE HUNTER	TH EXPLORATION LLC	1/8+	908 9	N/A	N/A	N/A
10*17441	J	9-11-8	RALPH J WILSON	TH EXPLORATION LLC	1/8+	921 522	N/A	N/A	N/A
10*16448	J	9-11-8	RALPH L AND JUANITA L CRIM	TH EXPLORATION LLC	1/8+	908 584	N/A	N/A	N/A
10*16690	J	9-11-8	RICARDO ORTIZ	TH EXPLORATION LLC	1/8+	921 352	N/A	N/A	N/A
10*17483	J	9-11-8	RICHARD I PYLE	TH EXPLORATION LLC	1/8+	921 359	N/A	N/A	N/A
10*16662	J	9-11-8	RICHARD THOMAS AND VICKI J MIMS	TH EXPLORATION LLC	1/8+	908 863	N/A	N/A	N/A
10*16836	J	9-11-8	RICK A AND LENORE A STORTS	TH EXPLORATION LLC	1/8+	921 507	N/A	N/A	N/A
10*16297	J	9-11-8	ROBERT A LEADBETTER AND M REBECCA LEADBETTER	TH EXPLORATION LLC	1/8+	908 235	N/A	N/A	N/A
10*47051.223.10	J	9-11-8	ROBERT E GORBY	TH EXPLORATION LLC	1/8+	908 47	N/A	N/A	N/A
10*16545	J	9-11-8	ROBERT G & ELLEN FOUNDS	TH EXPLORATION LLC	1/8+	908 260	N/A	N/A	N/A
10*16838	J	9-11-8	ROBERT G FUNARI	TH EXPLORATION LLC	1/8+	921 82	N/A	N/A	N/A
10*16424	J	9-11-8	ROBERT J RIGBY	TH EXPLORATION, LLC	1/8+	908 241	N/A	N/A	N/A
10*16383	J	9-11-8	ROBERT STEPHEN DRIGGERS	TH EXPLORATION LLC	1/8+	908 224	N/A	N/A	N/A
10*47051.223.23	J	9-11-8	RONALD S CRIM	TH EXPLORATION LLC	1/8+	908 81	N/A	N/A	N/A
10*16118	J	9-11-8	RUBY RIDDLE JACKSON	TH EXPLORATION LLC	1/8+	908 233	N/A	N/A	N/A
10*47051.223.22	J	9-11-8	SALLY COLE	TH EXPLORATION LLC	1/8+	908 74	N/A	N/A	N/A
10*17744	J	9-11-8	SAM PRESLEY EZELL	TH EXPLORATION LLC	1/8+	921 116	N/A	N/A	N/A
10*17205	J	9-11-8	SANDRA JEAN WILSON	TH EXPLORATION LLC	1/8+	921 524	N/A	N/A	N/A
10*15750	J	9-11-8	SANDRA K TRULL	TH EXPLORATION LLC	1/8+	908 229	N/A	N/A	N/A
10*17442	J	9-11-8	SHANE ALLEN AND MENDY JEAN ALLEN	TH EXPLORATION LLC	1/8+	921 134	N/A	N/A	N/A
10*16821	J	9-11-8	SHEILA BRASKETT WEICHEY	TH EXPLORATION LLC	1/8+	921 516	N/A	N/A	N/A
10*16688	J	9-11-8	SHERRYL PYLE BAIR	TH EXPLORATION LLC	1/8+	927 481	N/A	N/A	N/A
10*15482	J	9-11-8	SUSAN NELSON	TH EXPLORATION LLC	1/8+	908 203	N/A	N/A	N/A
10*16415	J	9-11-8	TERENCE J & NANCY J ANDERSON	TH EXPLORATION, LLC	1/8+	908 213	N/A	N/A	N/A
10*17482	J	9-11-8	TERESA EZELLE RALYA AND DAVID L RALYA	TH EXPLORATION LLC	1/8+	927 487	N/A	N/A	N/A
10*16819	J	9-11-8	TERESA ORTIZ BIGGS	TH EXPLORATION LLC	1/8+	921 147	N/A	N/A	N/A
10*16837	J	9-11-8	TERRY L AND THELMA A POFF	TH EXPLORATION LLC	1/8+	927 472	N/A	N/A	N/A
10*17198	J	9-11-8	THOMAS G AND DIANE W BAYLESS	TH EXPLORATION LLC	1/8+	921 141	N/A	N/A	N/A
10*16996	J	9-11-8	THOMAS RANKIN	TH EXPLORATION LLC	1/8+	917 75	N/A	N/A	N/A
10*47051.223.27	J	9-11-8	TIMI J HOBBS	TH EXPLORATION LLC	1/8+	908 277	N/A	N/A	N/A
10*16863	J	9-11-8	TINA MOORE	TH EXPLORATION LLC	1/8+	921 334	N/A	N/A	N/A
10*16806	J	9-11-8	VIRGINIA I WHITMAN	TH EXPLORATION LLC	1/8+	921 528	N/A	N/A	N/A
10*47051.223.26	J	9-11-8	WENDY L SMARKEL	TH EXPLORATION LLC	1/8+	908 69	N/A	N/A	N/A
10*16747	J	9-11-8	WILLIAM DALE BRASKETT	TH EXPLORATION LLC	1/8+	921 96	N/A	N/A	N/A
10*16804	J	9-11-8	WILLIAM N AND SHERRY D TAYLOR	TH EXPLORATION LLC	1/8+	921 510	N/A	N/A	N/A
10*16516	J	9-11-8	WILSON ANDREW JACKSON	TH EXPLORATION LLC	1/8+	908 253	N/A	N/A	N/A
10*16244	K	9-12-1	EMILY ANN NICIFOROS	TH EXPLORATION LLC	1/8+	924 617	N/A	N/A	N/A
10*16149	K	9-12-1	THOMAS MICHAEL WALLACE	TH EXPLORATION LLC	1/8+	924 610	N/A	N/A	N/A
10*47051.333.1	K	9-12-1	THOMAS S RIGGS III	TH EXPLORATION LLC	1/8+	904 556	N/A	N/A	N/A
10*47051.333.2	K	9-12-1	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	TH EXPLORATION LLC	1/8+	907 220	N/A	N/A	N/A

51-01967

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*17665	L	9-12-30	ANN M & CURTIS STEVENS	TH EXPLORATION, LLC	1/8+	927 215	N/A	N/A	N/A
10*47051.318.35	L	9-12-30	ANNA MAE PATTERSON	TH EXPLORATION LLC	1/8+	905 573	N/A	N/A	N/A
10*16672	L	9-12-30	ANNE R AND JOSEPH A MURPHY	TH EXPLORATION LLC	1/8+	910 215	N/A	N/A	N/A
10*16737	L	9-12-30	ARIC A HOLMES AND CARI M HOLMES	TH EXPLORATION LLC	1/8+	913 389	N/A	N/A	N/A
10*47051.318.12	L	9-12-30	BARBARA J BEVERIDGE	TH EXPLORATION LLC	1/8+	904 606	N/A	N/A	N/A
10*16437	L	9-12-30	BECKY LANDRIS	TH EXPLORATION LLC	1/8+	926 625	N/A	N/A	N/A
10*16491	L	9-12-30	BELA N WELLENREITER	TH EXPLORATION LLC	1/8+	921 467	N/A	N/A	N/A
10*17619	L	9-12-30	BRENDA GILBERT	TH EXPLORATION LLC	1/8+	927 211	N/A	N/A	N/A
10*16818	L	9-12-30	BRENDA REED	TH EXPLORATION LLC	1/8+	927 30	N/A	N/A	N/A
10*47051.318.16	L	9-12-30	BULA F YOST	TH EXPLORATION LLC	1/8+	904 614	N/A	N/A	N/A
10*17726	L	9-12-30	C FREEMAN MCCALL AND SUSAN M MCCALL	TH EXPLORATION LLC	1/8+	915 480	N/A	N/A	N/A
10*47051.318.24	L	9-12-30	CARLA MAE ALLEY	TH EXPLORATION LLC	1/8+	904 516	N/A	N/A	N/A
10*47051.318.46	L	9-12-30	CAROL L BOBBY AND DONALD J BOBBY	TH EXPLORATION LLC	1/8+	905 603	N/A	N/A	N/A
10*16243	L	9-12-30	CATHERINE I AND ERNEST M SILVERIO	TH EXPLORATION LLC	1/8+	906 47	N/A	N/A	N/A
10*47051.318.43	L	9-12-30	CHAD ERIC BENNETT AND MARY A BENNETT	TH EXPLORATION LLC	1/8+	905 588	N/A	N/A	N/A
10*16769	L	9-12-30	CHARLES C SEAMON	TH EXPLORATION LLC	1/8+	910 219	N/A	N/A	N/A
10*47051.318.20	L	9-12-30	CHARLES R BENNETT JR AND DONNA S BENNETT	TH EXPLORATION LLC	1/8+	904 500	N/A	N/A	N/A
10*15684	L	9-12-30	CHARLES R WILLIAMSON JR	TH EXPLORATION LLC	1/8+	906 7	N/A	N/A	N/A
10*47051.318.2	L	9-12-30	CHRISTAL L SCHAFER	TH EXPLORATION LLC	1/8+	904 531	N/A	N/A	N/A
10*17476	L	9-12-30	CHRISTINA NESTELL AND CHARLES E NESTELL III	TH EXPLORATION LLC	1/8+	927 207	N/A	N/A	N/A
10*16280	L	9-12-30	CHRISTOPHER SAUDERS	TH EXPLORATION LLC	1/8+	905 612	N/A	N/A	N/A
10*16035	L	9-12-30	CLARISSA MALONE	TH EXPLORATION LLC	1/8+	906 23	N/A	N/A	N/A
10*47051.318.17	L	9-12-30	CORA ALICE DAUBE	TH EXPLORATION LLC	1/8+	904 618	N/A	N/A	N/A
10*47051.318.30	L	9-12-30	CYNTHIA TEACHNOR GRAHAM	TH EXPLORATION LLC	1/8+	905 553	N/A	N/A	N/A
10*16886	L	9-12-30	DALE R ALLEY	TH EXPLORATION LLC	1/8+	927 19	N/A	N/A	N/A
10*17620	L	9-12-30	DANIEL E WILLIAMSON AND HEATHER R WILLIAMSON	TH EXPLORATION LLC	1/8+	927 204	N/A	N/A	N/A
10*16232	L	9-12-30	DANIEL L ALLEY AND TERESA ALLEY	TH EXPLORATION LLC	1/8+	906 53	N/A	N/A	N/A
10*47051.318.36	L	9-12-30	DANNY CARMICHAEL III	TH EXPLORATION LLC	1/8+	905 576	N/A	N/A	N/A
10*16541	L	9-12-30	DEBORAH L TURLEY	TH EXPLORATION LLC	1/8+	926 644	N/A	N/A	N/A
10*47051.318.48	L	9-12-30	DEBORAH SUE KYLE 231 EAST 24TH AVENUE	TH EXPLORATION LLC	1/8+	905 600	N/A	N/A	N/A
10*15498	L	9-12-30	DELBERT D RUSH AND BETTY RUTH RUSH	TH EXPLORATION LLC	1/8+	905 647	N/A	N/A	N/A
10*16435	L	9-12-30	DENISE WILLIAMSON	TH EXPLORATION LLC	1/8+	926 622	N/A	N/A	N/A
10*16418	L	9-12-30	DENZIL ALLEY JR	TH EXPLORATION, LLC	1/8+	905 641	N/A	N/A	N/A
10*16381	L	9-12-30	DONNA BURNS	TH EXPLORATION LLC	1/8+	906 20	N/A	N/A	N/A
10*47051.318.15	L	9-12-30	DONNA CHMELYNKI	TH EXPLORATION LLC	1/8+	904 610	N/A	N/A	N/A
10*47051.318.10	L	9-12-30	DONNA JUNE STRAIT	TH EXPLORATION LLC	1/8+	904 600	N/A	N/A	N/A
10*47051.318.39	L	9-12-30	DONNA K DUNN AND JAMES DUNN	TH EXPLORATION LLC	1/8+	905 444	N/A	N/A	N/A
10*47051.318.34	L	9-12-30	DONNA SMITH WEEKLEY	TH EXPLORATION LLC	1/8+	905 442	N/A	N/A	N/A
10*47051.318.21	L	9-12-30	DORETTA RUSH	TH EXPLORATION LLC	1/8+	904 504	N/A	N/A	N/A
10*17705	L	9-12-30	EARL & LYDIA ARMENTA FRAZIER	TH EXPLORATION, LLC	1/8+	927 200	N/A	N/A	N/A
10*47051.318.22	L	9-12-30	ELIZABETH STARC	TH EXPLORATION LLC	1/8+	904 508	N/A	N/A	N/A
10*47051.318.23	L	9-12-30	EMMA CRISWELL	TH EXPLORATION LLC	1/8+	904 512	N/A	N/A	N/A
10*17893	L	9-12-30	ERIC D & AMANDA N PETRUCCI	TH EXPLORATION, LLC	1/8+	924 545	N/A	N/A	N/A
10*15496	L	9-12-30	FRANK A STORCH JR AND SUSAN STORCH	TH EXPLORATION LLC	1/8+	906 1	N/A	N/A	N/A

51-01967

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.318.47	L	9-12-30	FRIEDA A REINBEAU AND RONALD REINBEAU	TH EXPLORATION LLC	1/8+	905 598	N/A	N/A	N/A
10*47051.318.37	L	9-12-30	GENELDA MASON	TH EXPLORATION LLC	1/8+	905 580	N/A	N/A	N/A
10*16375	L	9-12-30	GEORGE E HOLMES AND SUSAN HOLMES	TH EXPLORATION LLC	1/8+	905 635	N/A	N/A	N/A
10*17375	L	9-12-30	GEORGE R CORNELIUS JR AND JANNA JANOUSEK CORNELIUS	TH EXPLORATION LLC	1/8+	927 36	N/A	N/A	N/A
10*47051.318.33	L	9-12-30	J RONALD FOX	TH EXPLORATION LLC	1/8+	905 565	N/A	N/A	N/A
10*17177	L	9-12-30	JAMES P MILLER	TH EXPLORATION LLC	1/8+	926 608	N/A	N/A	N/A
10*47051.318.9	L	9-12-30	JANICE M MEDER	TH EXPLORATION LLC	1/8+	905 545	N/A	N/A	N/A
10*16290	L	9-12-30	JENNIFER ALLEY	TH EXPLORATION LLC	1/8+	906 59	N/A	N/A	N/A
10*16578	L	9-12-30	JESSE HOLMES	TH EXPLORATION LLC	1/8+	909 502	N/A	N/A	N/A
10*47051.318.8	L	9-12-30	JOHN M SHALLENBERGER AND JOANNE SHALLENBERGER	TH EXPLORATION LLC	1/8+	905 541	N/A	N/A	N/A
10*17294	L	9-12-30	JOHN P HOLMES AND DEBRA A HOLMES	TH EXPLORATION LLC	1/8+	927 6	N/A	N/A	N/A
10*47051.318.41	L	9-12-30	JOHN T CRISWELL AND CATHERINE A CRISWELL	TH EXPLORATION LLC	1/8+	905 582	N/A	N/A	N/A
10*16487	L	9-12-30	JOHN WILLIAMSON JR	TH EXPLORATION LLC	1/8+	927 27	N/A	N/A	N/A
10*47051.318.6	L	9-12-30	JOSEPH F STARC JR AND DONNA STARC	TH EXPLORATION LLC	1/8+	904 596	N/A	N/A	N/A
10*47051.318.1	L	9-12-30	JOSEPH PAUL FOX AND MARGARET H FOX	TH EXPLORATION LLC	1/8+	905 569	N/A	N/A	N/A
10*16785	L	9-12-30	JOSHUA W SEAMON	TH EXPLORATION LLC	1/8+	910 223	N/A	N/A	N/A
10*16508	L	9-12-30	JUDITH C LORADITCH	TH EXPLORATION LLC	1/8+	926 631	N/A	N/A	N/A
10*15462	L	9-12-30	JUDITH F TEMPLE AND LOUIS I TEMPLE	TH EXPLORATION LLC	1/8+	905 617	N/A	N/A	N/A
10*47051.318.19	L	9-12-30	JUDY LYNN CHIPLINSKI	TH EXPLORATION LLC	1/8+	904 496	N/A	N/A	N/A
10*47051.318.27	L	9-12-30	KAREN J BRUGGEMAN	TH EXPLORATION LLC	1/8+	904 520	N/A	N/A	N/A
10*16374	L	9-12-30	KAREN L ZUCKER AND MICHAEL D ZUCKER	TH EXPLORATION LLC	1/8+	905 632	N/A	N/A	N/A
10*17678	L	9-12-30	KATHERINE & DANIEL DEGROOT	TH EXPLORATION, LLC	1/8+	927 218	N/A	N/A	N/A
10*16110	L	9-12-30	KATHLEEN D AND STEVEN MONIGOLD	TH EXPLORATION LLC	1/8+	906 35	N/A	N/A	N/A
10*17818	L	9-12-30	KATHLEEN REILLY MANNIX AND J MICHAEL MANNIX	TH EXPLORATION LLC	1/8+	917 128	N/A	N/A	N/A
10*16539	L	9-12-30	KATHRYN BROWN AND BRUCE G BROWN	TH EXPLORATION LLC	1/8+	926 641	N/A	N/A	N/A
10*15468	L	9-12-30	KEITH W STORCH AND DEBORAH A STORCH	TH EXPLORATION LLC	1/8+	905 624	N/A	N/A	N/A
10*17475	L	9-12-30	LARRY R CRANE	TH EXPLORATION LLC	1/8+	927 13	N/A	N/A	N/A
10*15740	L	9-12-30	LARRY W ALLEY	TH EXPLORATION LLC	1/8+	912 49	N/A	N/A	N/A
10*17172	L	9-12-30	LINDA K AND MICHAEL HUMES	TH EXPLORATION LLC	1/8+	927 33	N/A	N/A	N/A
10*16382	L	9-12-30	LINDA M HONE AND VAUGHN HONE SR	TH EXPLORATION LLC	1/8+	906 17	N/A	N/A	N/A
10*16330	L	9-12-30	LISA R IMHOFF AND CHAD IMHOFF	TH EXPLORATION LLC	1/8+	905 626	N/A	N/A	N/A
10*16331	L	9-12-30	LOLA F BLEVINS	TH EXPLORATION LLC	1/8+	905 630	N/A	N/A	N/A
10*47051.318.28	L	9-12-30	LORAIN GAIL STARC HORNER AND CHARLES HORNER	TH EXPLORATION LLC	1/8+	904 524	N/A	N/A	N/A
10*17388	L	9-12-30	LORI A FARMER AND DANIEL K FARMER	TH EXPLORATION LLC	1/8+	927 9	N/A	N/A	N/A
10*16607	L	9-12-30	LOUISE M AND WILSON D MCELHINNY	TH EXPLORATION LLC	1/8+	909 72	N/A	N/A	N/A
10*17536	L	9-12-30	MABEL MCCARTHY	TH EXPLORATION LLC	1/8+	909 512	N/A	N/A	N/A
10*47051.318.25	L	9-12-30	MARIANN T DARGUSCH AND JONATHON DARGUSCH	TH EXPLORATION LLC	1/8+	905 549	N/A	N/A	N/A
10*16189	L	9-12-30	MARLENE BAKER	TH EXPLORATION LLC	1/8+	906 50	N/A	N/A	N/A
10*17882	L	9-12-30	MARY E HAMM	TH EXPLORATION, LLC	1/8+	924 552	N/A	N/A	N/A
10*47051.318.4	L	9-12-30	MARY ELISE CAMP	TH EXPLORATION LLC	1/8+	905 557	N/A	N/A	N/A
10*17809	L	9-12-30	MARY M MORRIS	TH EXPLORATION LLC	1/8+	921 66	N/A	N/A	N/A
10*16054	L	9-12-30	MEGAN R AUSTIN AND ANTHONY B POWERS	TH EXPLORATION LLC	1/8+	906 29	N/A	N/A	N/A
10*16032	L	9-12-30	MELINDA M GREENOUGH AND DOUGLAS CORWIN GREENOUGH	TH EXPLORATION LLC	1/8+	906 26	N/A	N/A	N/A
10*17477	L	9-12-30	MICHAEL SAUDERS AND AMI SAUDERS	TH EXPLORATION LLC	1/8+	927 39	N/A	N/A	N/A

51-01967

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

51-01967

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10*47051.318.18	L	9-12-30	MICHAEL WAYNE ALLEY AND LINDA ALLEY	TH EXPLORATION LLC	1/8+	904 622	N/A	N/A	N/A
10*47051.318.40	L	9-12-30	NANCY MARIE DUNN AND GEORGE L DUNN	TH EXPLORATION LLC	1/8+	905 590	N/A	N/A	N/A
10*16241	L	9-12-30	NANNETTE BERLETCH AND MATTHEW S BERLETCH JR	TH EXPLORATION LLC	1/8+	906 56	N/A	N/A	N/A
10*16671	L	9-12-30	NATHAN AND KARI KOHRMANN	TH EXPLORATION LLC	1/8+	913 40	N/A	N/A	N/A
10*47051.318.45	L	9-12-30	PATRICIA KIRCHNER	TH EXPLORATION LLC	1/8+	905 592	N/A	N/A	N/A
10*16047	L	9-12-30	PEGGY KOHRMANN AND DAVID KOHRMANN	TH EXPLORATION LLC	1/8+	906 32	N/A	N/A	N/A
10*16823	L	9-12-30	PEGGY N AND JAMES E GLASER	TH EXPLORATION LLC	1/8+	913 373	N/A	N/A	N/A
10*47051.318.52	L	9-12-30	PETER G STORCH AND LAURIE L STORCH	TH EXPLORATION LLC	1/8+	905 608	N/A	N/A	N/A
10*16488	L	9-12-30	RACHEL AND FRED THORNE JR	TH EXPLORATION LLC	1/8+	926 628	N/A	N/A	N/A
10*47051.318.3	L	9-12-30	RANDY W MORRIS AND CHERYL MORRIS	TH EXPLORATION LLC	1/8+	904 535	N/A	N/A	N/A
10*16184	L	9-12-30	RAYMOND P RIEK AND GARDALEE RIECK	TH EXPLORATION LLC	1/8+	906 44	N/A	N/A	N/A
10*47051.318.7	L	9-12-30	REED O MILLER AND EFFIE M MILLER	TH EXPLORATION LLC	1/8+	904 598	N/A	N/A	N/A
10*47051.318.57	L	9-12-30	RHONDA L PALASOTA AND SAM A PALASOTA	TH EXPLORATION LLC	1/8+	905 620	N/A	N/A	N/A
10*47051.318.11	L	9-12-30	RICHARD TAYLOR	TH EXPLORATION LLC	1/8+	904 604	N/A	N/A	N/A
10*16137	L	9-12-30	RODNEY K. BANE & CATHIE J. BANE	TH EXPLORATION LLC	1/8+	906 41	N/A	N/A	N/A
10*16528	L	9-12-30	ROSELLA M HERR AND WILLARD L HERR	TH EXPLORATION LLC	1/8+	927 1	N/A	N/A	N/A
10*47051.318.53	L	9-12-30	ROSEMARIE BERISFORD	TH EXPLORATION LLC	1/8+	905 610	N/A	N/A	N/A
10*47051.318.56	L	9-12-30	SALLY MERRICK	TH EXPLORATION LLC	1/8+	905 614	N/A	N/A	N/A
10*15461	L	9-12-30	SANDRA SUE HALL AND DAVID HALL	TH EXPLORATION LLC	1/8+	905 622	N/A	N/A	N/A
10*47051.318.49	L	9-12-30	SHARLA ROLLINS AND GARY ROLLINS	TH EXPLORATION LLC	1/8+	905 594	N/A	N/A	N/A
10*47051.318.32	L	9-12-30	SHARON KELLER JOEY KELLER JR	TH EXPLORATION LLC	1/8+	904 539	N/A	N/A	N/A
10*47051.318.50	L	9-12-30	SHEILA SIMMONS	TH EXPLORATION LLC	1/8+	905 606	N/A	N/A	N/A
10*47051.318.38	L	9-12-30	SHERWOOD MASON NILA JUNE MASON	TH EXPLORATION LLC	1/8+	905 448	N/A	N/A	N/A
10*17496	L	9-12-30	STACY L BARNHART	TH EXPLORATION LLC	1/8+	927 16	N/A	N/A	N/A
10*47051.318.44	L	9-12-30	STACY R BENNETT	TH EXPLORATION LLC	1/8+	905 596	N/A	N/A	N/A
10*16366	L	9-12-30	STEVEN P ROBERTS	TH EXPLORATION LLC	1/8+	905 628	N/A	N/A	N/A
10*16410	L	9-12-30	SUSAN I BAKER	TH EXPLORATION LLC	1/8+	905 638	N/A	N/A	N/A
10*47051.318.42	L	9-12-30	TARA E CAUSEY	TH EXPLORATION LLC	1/8+	905 586	N/A	N/A	N/A
10*16744	L	9-12-30	THE JENNIFER TEACHNOR GAFFEY LIVING TRUST DATED OCTOBER 30TH 2013	TH EXPLORATION LLC	1/8+	926 634	N/A	N/A	N/A
10*17815	L	9-12-30	THE TESTAMENTARY TRUST OF CAREY B PAUL III	TH EXPLORATION LLC	1/8+	919 252	N/A	N/A	N/A
10*15682	L	9-12-30	THELMA W BIRDWELL	TH EXPLORATION LLC	1/8+	906 9	N/A	N/A	N/A
10*15727	L	9-12-30	TIMOTHY LEE COLLEY	TH EXPLORATION LLC	1/8+	906 12	N/A	N/A	N/A
10*15497	L	9-12-30	TOM ALLEY	TH EXPLORATION LLC	1/8+	905 644	N/A	N/A	N/A
10*15685	L	9-12-30	TRACY RAND	TH EXPLORATION LLC	1/8+	906 4	N/A	N/A	N/A
10*16898	L	9-12-30	VICTOR E ALLEY JR AND DEBRA A ALLEY	TH EXPLORATION LLC	1/8+	926 647	N/A	N/A	N/A
10*16071	L	9-12-30	VIRGINIA LESLIE BERTRAM	TH EXPLORATION LLC	1/8+	901 370	N/A	N/A	N/A
10*16616	L	9-12-30	WILLIAM BRYAN COLLEY	TH EXPLORATION LLC	1/8+	913 628	N/A	N/A	N/A
10*47051.318.5	L	9-12-30	WILLIAM F EWART JR AND JOAN REED EWART	TH EXPLORATION LLC	1/8+	905 438	N/A	N/A	N/A
10*47051.318.31	L	9-12-30	WILLIAM RICHARD FOX	TH EXPLORATION LLC	1/8+	905 561	N/A	N/A	N/A
10*16606	L	9-12-30	WILLIAM T AND BARBARA W PAUL	TH EXPLORATION LLC	1/8+	919 252	N/A	N/A	N/A
10*47051.312.0	M	9-12-37	JAN GRIMES SIMNACHER LEONARD A SIMNACHER	TH EXPLORATION LLC	1/8+	904 472	N/A	N/A	N/A
10*16244	N	9-12-31	EMILY ANN NICIFOROS	TH EXPLORATION LLC	1/8+	924 617	N/A	N/A	N/A
10*15603	N	9-12-31	HAYHURST COMPANY A FLORIDA PARTNERSHIP	CHESAPEAKE APPALACHIA LLC	1/8+	727 253	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*16149	N	9-12-31	THOMAS MICHAEL WALLACE	TH EXPLORATION LLC	1/8+	924 610	N/A	N/A	N/A

WW-6A1 Supplement

Operator's Well No. Heaven Hill 3 - 8HU

51-01967
L9610-18

Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*47051.333.1	N	9-12-31	THOMAS S RIGGS III	TH EXPLORATION LLC	1/8+	904 556	N/A	N/A	N/A
10*47051.333.2	N	9-12-31	WILLIAM MARTIN RIGGS ANGELA RAE MOORE	TH EXPLORATION LLC	1/8+	907 220	N/A	N/A	N/A
10*47051.140.1	O	9-12-32	DAVID P CHAPMAN & DEBORAH BORCK-CHAPMAN	TH EXPLORATION LLC	1/8+	866 318	N/A	N/A	N/A
10*47051.140.2	O	9-12-32	DOROTHY SULLIVAN POA JAMES REID SULLIVAN	TH EXPLORATION LLC	1/8+	873 501	N/A	N/A	N/A

51-01967

DPE LAND SERVICE
6000 TOWN CENTER BLVD STE 145
CANDANBURG, PA 15317-5841

BOOK 0036 PAGE 0148

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404376
Date Recorded 05/20/2016
Document Type ASH
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

217
for now

03/02/2018

51-01967



June 28, 2017

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

RE: Heaven Hill 3-8HU

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 3-8HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

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

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Environmental Protection

03/02/2018

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

Date of Notice Certification: 09/01/2017

API No. 47- 051 - 01967
Operator's Well No. Heaven Hill 3-8HU
Well Pad Name: _____

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>526,259.83</u>
County: <u>Marshall</u>		Northing: <u>4,406,563.54</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. Whittatch</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: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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WV Department of
Environmental Protection

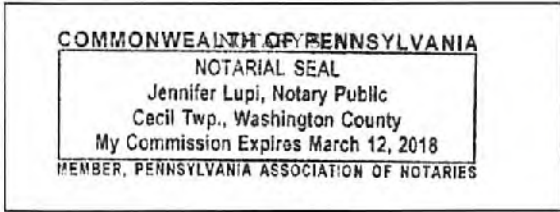
Required Attachments:

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

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 1st 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.

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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. Whittatch
Address: 1044 Yeater Lane
Glen Easton, WV 26039

Name: None
Address: _____

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

Name: Andrew Whittatch
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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Environmental Protection

API NO. 47- 051

OPERATOR WELL NO. Heaven Hill 3-8HU

Well Pad Name: Heaven Hill 3

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

03/02/2018

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47-051 - 01967
OPERATOR WELL NO. Heaven Hill 3-8HU
Well Pad Name: Heaven Hill 3

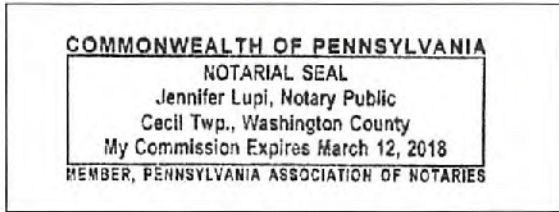
Notice is hereby given by:

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.



Subscribed and sworn before me this 31st 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')

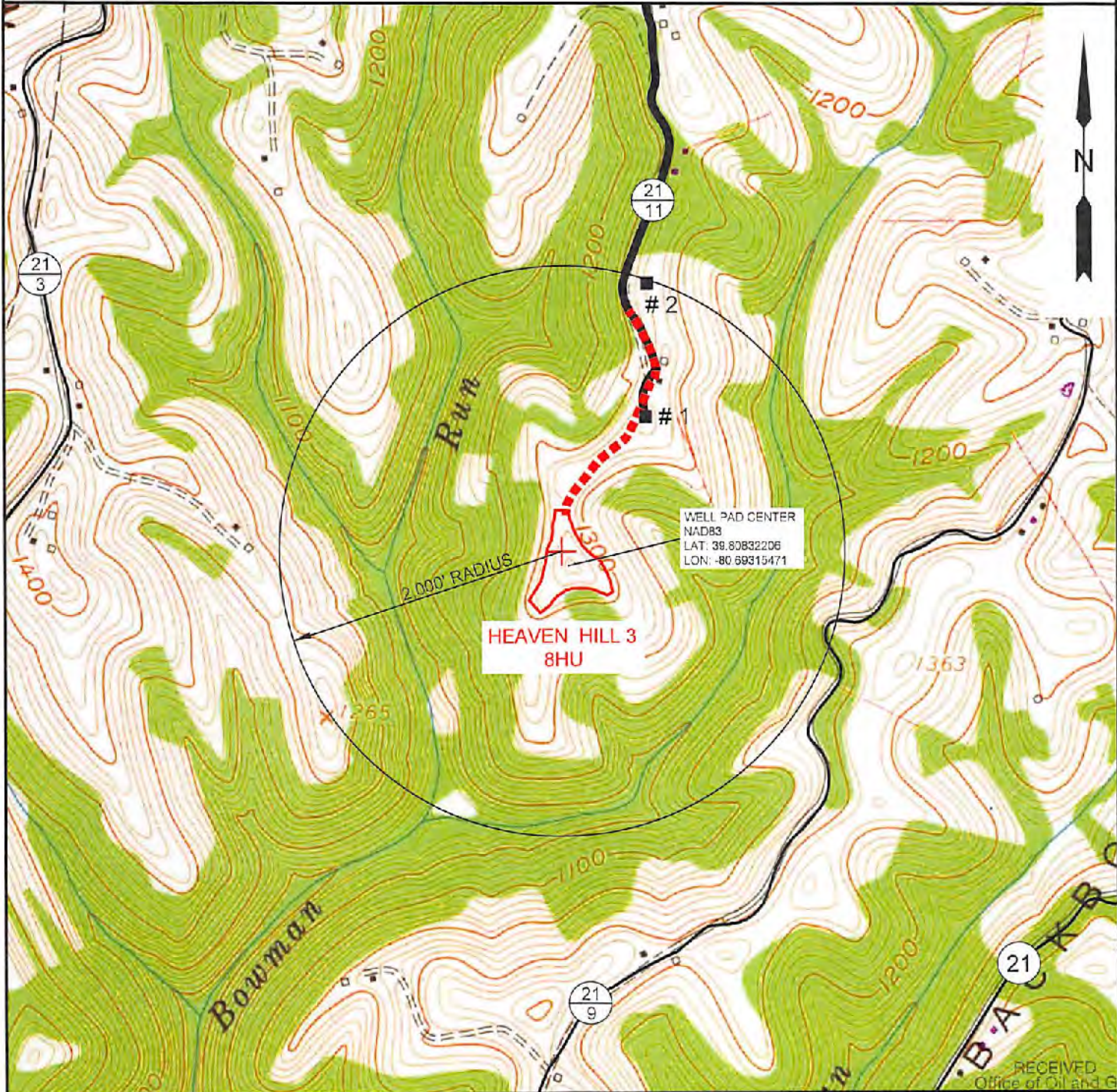
Well: Heaven Hill 3 - 8HU
District: Meade (House #'s 1 & 2)
State: WV

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.

<p>House 1 TM 7 Pcl. 30 Ricky L. Whitlatch ✓ Phone: 304-843-1168 Physical Address: 1044 Yeater Ln. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 2 TM 7 Pcl. 30.1 Andrew Corey Whitlatch ✓ Phone: 304-845-9605 Physical Address: 942 Yeater Ln. Glen Easton, WV 26039 Tax Address: Same</p>
---	--

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PROPOSED HEAVEN HILL 3 - 8HU



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

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SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vinhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8654	08/25/2017	1" = 1000'



**TUG HILL
OPERATING**

03/02/2018

51-01967

WW-6A3
(1/12)

Operator Well No. Heaven Hill Unit 3-3HU

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. Whittlech
 Address: 1044 Yeater Lane
Glen Easton, WV 26039

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

Name: Amie 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. Whittlech
 Address: 1044 Yeater Lane
Glen Easton, WV 26039 ****SEE SUPPLEMENT PAGE****

*please attach additional forms if necessary

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>Lat: 39.8083194 Long: -80.6931660</u>
County: <u>Marshall</u>	Public Road Access: <u>Yeater Lane (CO. RT. 21/11)</u>
District: <u>Meade</u>	Watershed: <u>HUC-10 Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Ricky L. Whittlech</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC

Telephone: 724-0749-8388

Email: jwhite@tug-hilltop.com

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

Facsimile: 724-338-2030

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WV Department of
Environmental Protection

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.

03/02/2018

51-01967

Operator Well No. Heaven Hill Unit 3-8HU

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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03/02/2018

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

Name: Andrew Whitlatch
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>526,259.83</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,563.54</u>
District:	<u>Meade</u>	Public Road Access:	<u>Yeater Lane (Co. Rt. 21/11)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>Ricky L. Whitlatch</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

This Notice Shall Include:

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

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

Address: 360 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.

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03/02/2018

51-01967

Operator Well No. Heaven Hill Unit 3-8HU

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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51-01967



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 57th Street, SE
Charleston, WV 25304

Subject: DOH Permit for the Heaven Hills Unit 3 Pad, Marshall County
Heaven Hills Unit 3-8HU 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,

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

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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill 3-8HU

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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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

APPROVED
WVDEP OOG
WES 7/10/2017

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: 1-817-633-3400

Exhibit A: Final Design: Issue for Permitting

Section	Coordinates
Section 1	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 2	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 3	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 4	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 5	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 6	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 7	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 8	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 9	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84
Section 10	WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84 WVA NAD 83 E 133771.87 WVA NAD 83 N 409522.84



Property Owner Information - Heaven Hill 3 Site

Owner	Address	City	State	Zip	Phone	Area
WV State	1000 17th St SW	Charleston	WV	25304	304-556-3000	1000
WV State	1000 17th St SW	Charleston	WV	25304	304-556-3000	1000
WV State	1000 17th St SW	Charleston	WV	25304	304-556-3000	1000
WV State	1000 17th St SW	Charleston	WV	25304	304-556-3000	1000
WV State	1000 17th St SW	Charleston	WV	25304	304-556-3000	1000

Access Road

Access Road	Width	Depth	Type
Access Road	10.0	1.0	Gravel
Access Road	10.0	1.0	Gravel
Access Road	10.0	1.0	Gravel

Disturbed Area

Disturbed Area	Area
Disturbed Area	1.0
Disturbed Area	1.0
Disturbed Area	1.0

Heaven Hill 3 Site Quantities

Item	Quantity	Unit
Excavation	1000	cu yd
Fill	1000	cu yd
Gravel	1000	cu yd
Asphalt	1000	sq yd
Concrete	1000	cu yd
Rebar	1000	lb
Timber	1000	cu yd
Grass	1000	sq ft

Project Contacts

Client: Tug Hill Operating, LLC
300 Sandstone Drive, Suite 200
Charleston, WV 25301

Designer: WES
1800 17th St SW
Charleston, WV 25304

811
Call before you dig.

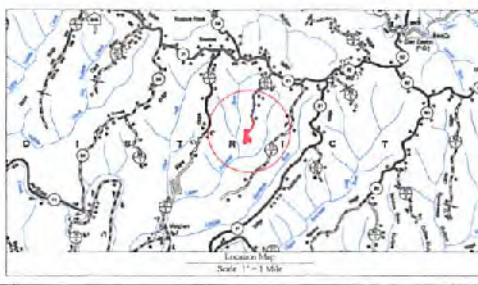
Project Location

Section 1: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 2: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 3: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 4: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 5: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 6: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 7: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 8: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 9: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84
Section 10: WVA NAD 83 E 133771.87, WVA NAD 83 N 409522.84

Approach Route:

From the intersection of US 20 and WV Rt 2 in Meadsville, WV, follow WV Rt 2 South for 0.9 mi. Turn left onto State Rt 2. Follow State Rt 2 for 2.6 mi. Turn left onto Co Rt 21 (Dobson Ridge Rd). Follow Co Rt 21 for 2.4 mi. Continue straight onto Co Rd 2 (Fisher Ridge Rd, Jersey Rd). Follow Co Rd 2 for 4.0 mi. Turn left to continue on Co Rd 2 (Roberts Ridge Rd). Follow Co Rd 2 for 2.3 mi. Turn right onto Co Rd 21. Follow Co Rd 21 for 0.9 mi. The site entrance will be at the end of the county road.

Site Location (NAD 83)			Site Location (NAD 83)		
Section	Latitude (N)	Longitude (W)	Section	Latitude (N)	Longitude (W)
Section 1	39.80832206	-80.69315471	Section 2	39.80832206	-80.69315471
Section 3	39.80832206	-80.69315471	Section 4	39.80832206	-80.69315471
Section 5	39.80832206	-80.69315471	Section 6	39.80832206	-80.69315471
Section 7	39.80832206	-80.69315471	Section 8	39.80832206	-80.69315471
Section 9	39.80832206	-80.69315471	Section 10	39.80832206	-80.69315471



North Arrow

Scale: 1" = 1 Mile

Project Information:

Project Name: Heaven Hill 3 Site
Project Number: 1800-17-2017-001
Project Date: 7/10/2017
Project Location: Section 1, Tug Hill Operating, LLC, 300 Sandstone Drive, Suite 200, Charleston, WV 25301

Project Engineer: [Signature]

Project Designer: [Signature]

Sheet Description

Sheet	Description
1	Cover Sheet
2	Site Map
3	Site Conditions
4	Site Plan
5	Site Erosion
6	Site Sediment
7	Site Stormwater
8	Site Access
9	Site Utilities
10	Site Construction
11	Site Erosion Control
12	Site Sediment Control
13	Site Stormwater Control
14	Site Access Control
15	Site Utilities Control
16	Site Construction Control
17	Site Erosion Control
18	Site Sediment Control
19	Site Stormwater Control
20	Site Access Control
21	Site Utilities Control

TUG HILL OPERATING

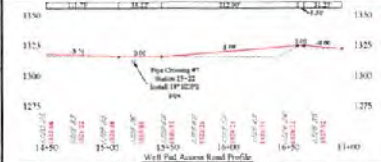
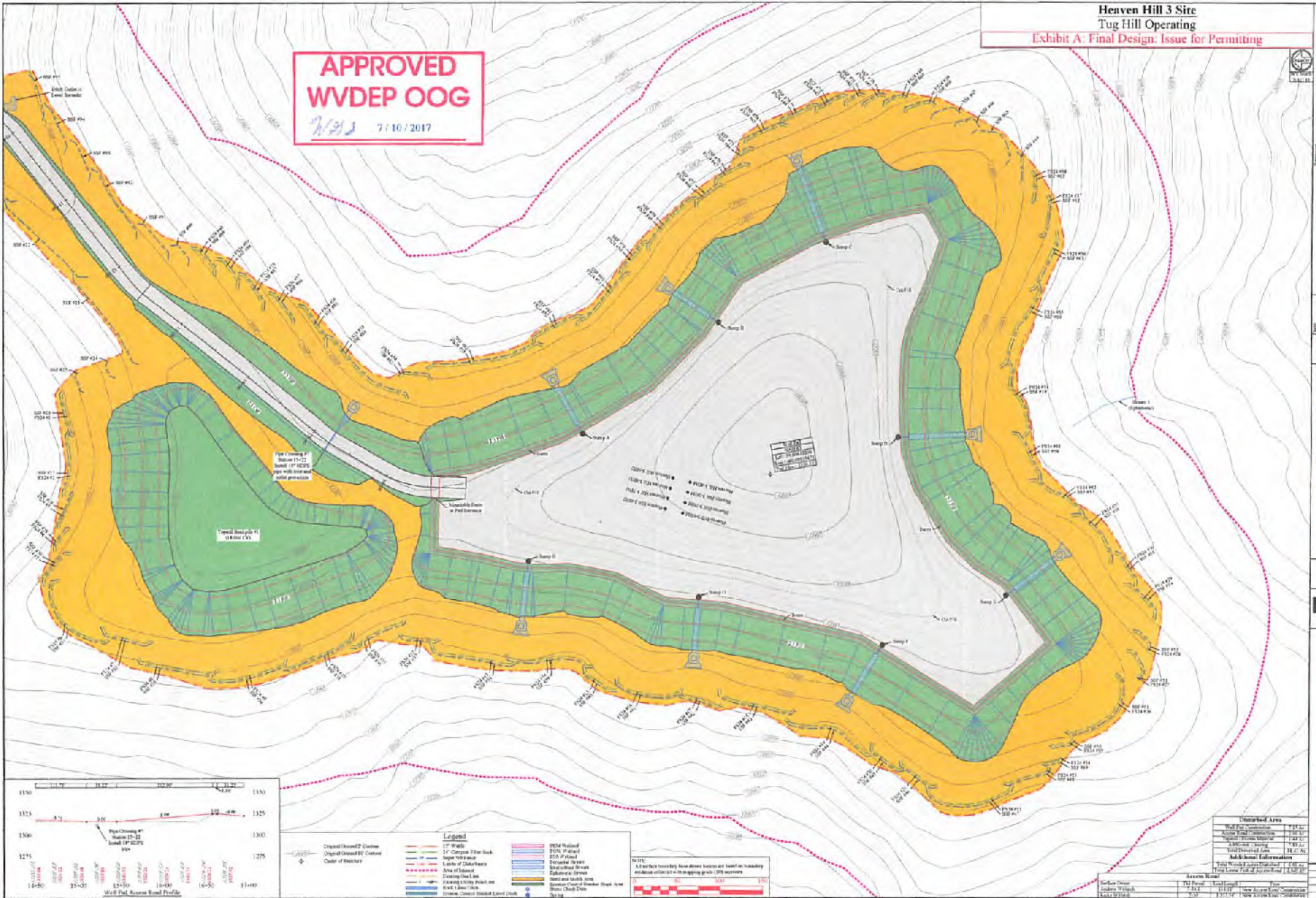
Heaven Hill 3 Site
Meade District
Marshall County, WV

Sheet 1 of 14

Heaven Hill 3 Site
Tug Hill Operating

Exhibit A: Final Design: Issue for Permitting

APPROVED
WVDEP OOG
W/S/S 7/10/2017



Legend	
Original Ground Contour	12" Water
Original Ground Contour Color of Boundary	24" Concrete Filter Back Super Stormwater
Line of 24" Water	100% Filtered
Line of 24" Water	Existing Storm
Existing Out Line	Stormwater Storage
Existing Out Line	Existing Storm
Existing Out Line	Storm and Storage Area
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage
Existing Out Line	Stormwater Storage

NOTES:
All perfect boundary lines shown herein are based on boundary evidence collected at the mapping date (CPI) locations.

Disturbed Area	
1111	1111
1111	1111
1111	1111
1111	1111
1111	1111
1111	1111
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1111	1111
1111	1111

Access Road	
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1111	1111
1111	1111

HEAVEN HILL 3 OPERATING

TUG HILL OPERATING

THE DOCUMENT PREPARED FOR TUG HILL OPERATING

K+S OPERATING

Environment and Sediment Control Plan

Heaven Hill 3 Site

Meigs District

Marietta County, WV

Scale: As Shown

Prepared by: J.S.

Date: 6/16/2017

Issue: 7/10/2017

Drawn By	Checked By	Designed By	Reviewed By	Date
J.W.	J.S.	J.S.	J.S.	6/16/2017