



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

Monday, March 11, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for WOODFORD 10HU
47-051-02152-00-00

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: WOODFORD 10HU
Farm Name: CNX RCPC, LLC
U.S. WELL NUMBER: 47-051-02152-00-00
Horizontal 6A New Drill
Date Issued: 3/11/2019

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.

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.



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

Barry K. Lay, Chairman
dep.wv.gov

February 15, 2019

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

RE: Application for Deep Well Permit – API #47-051-02152

COMPANY: Tug Hill Operating, LLC

FARM: CNX Land, LLC Woodford 10HU

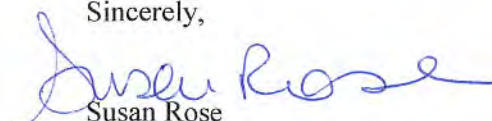
COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

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: yes; 47-051-02143; 47-051-02147, 47-051-02149, 47-051-02150, 47-051-2029, 47-051-02030, 47-051-01983, 47-051-01998
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,


Susan Rose
Administrator

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

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin Powhatan Point 7
Operator ID County District Quadrangle

2) Operator's Well Number: Woodford 10HU Well Pad Name: Woodford

3) Farm Name/Surface Owner: CNX Land, LLC Public Road Access: Burch Ridge Road (County Route 29)

4) Elevation, current ground: 1250' Elevation, proposed post-construction: 1233.51'

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

(b) If Gas Shallow _____ Deep
Horizontal

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6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):

Point Pleasant is the target formation at a depth of 11,079' - 11,200' - thickness of 121' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,350'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 22,704'

11) Proposed Horizontal Leg Length: 10,501.96'

12) Approximate Fresh Water Strata Depths: 70' ; 805'

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: Sewickley Coal - 701' ; Pittsburgh Coal - 799'

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

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: _____
Depth: _____
Seam: _____
Owner: _____

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	900'	900'	1,463FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2800'	2800'	1,974FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,595'	10,595'	3,457FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	22,704'	22,704'	4,759FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,781'	
Liners							

X
11/29/18

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,385	11,624		
Liners							

PACKERS

Kind:	N/A			
Sizes:	N/A			RECEIVED Office of Oil and Gas
Depths Set:	N/A			DEC 17 2018

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11/29/18

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

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

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

Well to be completed with approximately 26,250,000 lb proppant and 405,844 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 44.34 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.01 acres

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

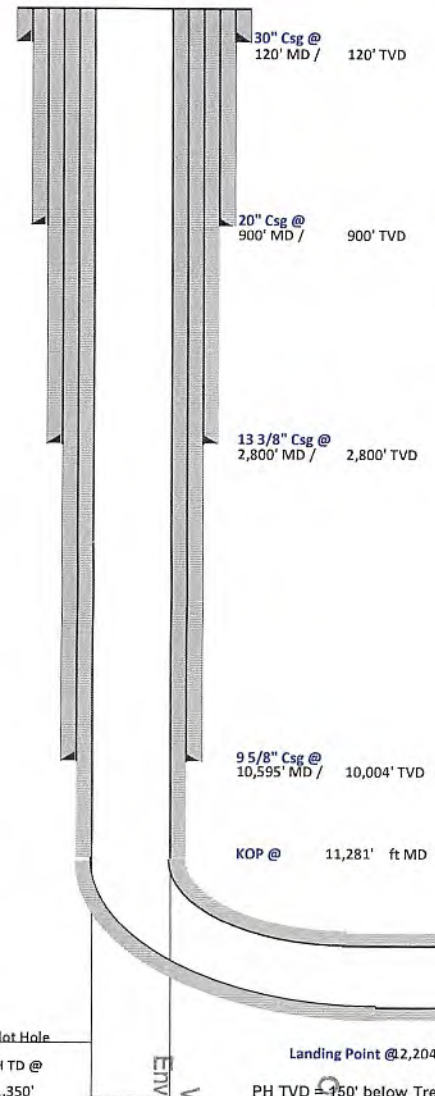


WELL NAME: Woodford-10HU
STATE: WV **COUNTY:** Marshall
DISTRICT: Franklin
DF Elev: 1,235' **GL Elev:** 1,235'
TD: 22,704'
TH Latitude: 39.80430488
TH Longitude: -80.81194602
BH Latitude: 39.77647753
BH Longitude: -80.78065867

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	805'
Sewickley Coal	701'
Pittsburgh Coal	799'
Big Lime	2,271'
Berea	2,785'
Tully	6,443'
Marcellus	6,504'
Onondaga	6,558'
Salina	7,232'
Lockport	8,233'
Utica	10,831'
Point Pleasant	11,079'
Landing Depth	11,129'
Trenton	11,200'
Pilot Hole TD	11,350'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	900'	900'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,800'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,595'	10,004'	47	HPP110	Surface
Production	8 1/2	5 1/2	22,704'	11,312'	23	HCP110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,576	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,140	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,813	A	14.5	Air	1 Centralizer every other jt
Production	4,759	A	15	Air / SOB M	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



JC 11/22/15

Pilot Hole TD @ 11,350'
 Landing Point @ 2,204' MD / 11,129' TVD
 PH TVD = 1,350' below Trenton Top

Lateral TD @ 22,704' ft MD
 11,312' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Woodford-10HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	900'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,800'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,595'	CTS
Production	5 1/2"	HCP110	8 1/2"	22,704'	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

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (7/2/2018) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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

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

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Permit well - Woodford-10HU

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102000	Tug Hill Operating	0'	None	None	No, this is a Marcellus horizontal permit. Once drilled, proper casing and cement should prevent migration of fluids.	Marcellus horizontal permit, not yet drilled

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WVGES
"Pipeline"

Select County: (051) Marshall
Enter Permit #: 02000
Get Data | Reset

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

[Home](#) [Data Collection](#) [County Data](#) [Production](#)
[Permit Information](#) [Leases](#)
[Lease Data](#) [Lease Data](#)
[Lease Data](#) [Lease Data](#)
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WV Geological & Economic Survey Well: County = 51 Permit = 02000

Location Information [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_76	QUAD_75	LAT_DD	LON_DD	UTIME	UTMIN
020102000	Marshall	02000	Marshall	76	75	39 50579	83 76719	117204.4	444993.8

Bottom Hole Location Information

API	ES	FLAG	UTIME	UTMIN	LGA_DD	LAT_DD
020102000	1	A	118133.9	442979.7	39 73857	83 73857

Owner Information

API	CMP_ID	SUFFIX	STATUS	SURFACE OWNER	WELL NUM	CO NUM	LEASE	LEASE NUM	MINERAL OWN	OPERATOR AT COMPLETION	PROP_VO	PROP_TYPT	FM_TYALEST	SR
020102000	001		Completed	Lease Resources Inc	11342	1	11342	1	Marshall Resources Inc	Lease Resources Inc	000	Marshall	SR	

Completion Information

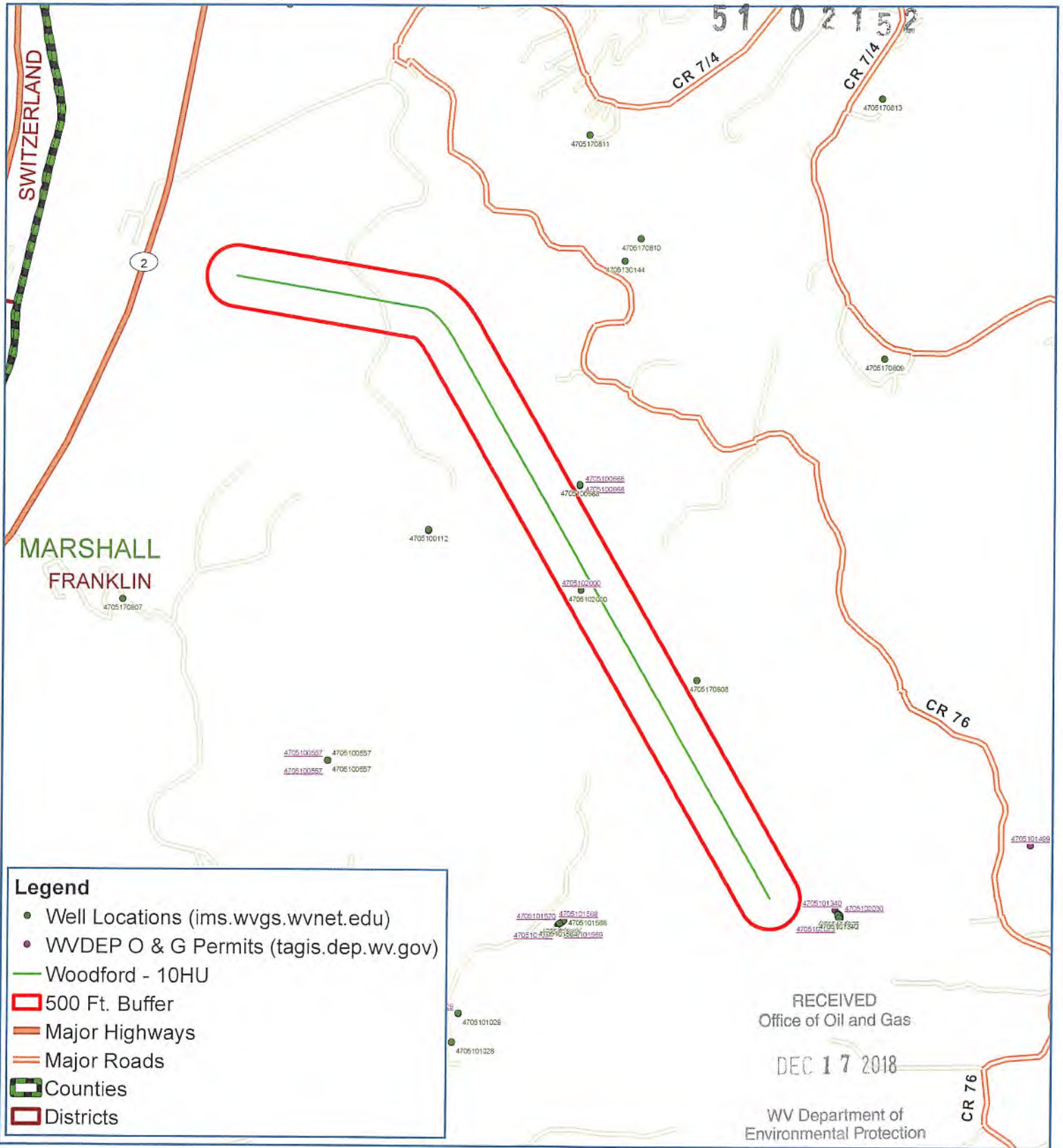
API	CMP_ID	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_PEP	INITIAL_CLASS	FINAL_CLASS	TYPE	REV	CMP_MINS	TYO	TRO	NEW_PTO	ROD	G_BF	G_AFT	G_BF	G_AFT
020102000	001	01/01/00	1181	Ground Level															

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

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Woodford - 10HU Franklin District Marshall County, WV



Map Created: July 3, 2018
Map Current As Of: July 3, 2018

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

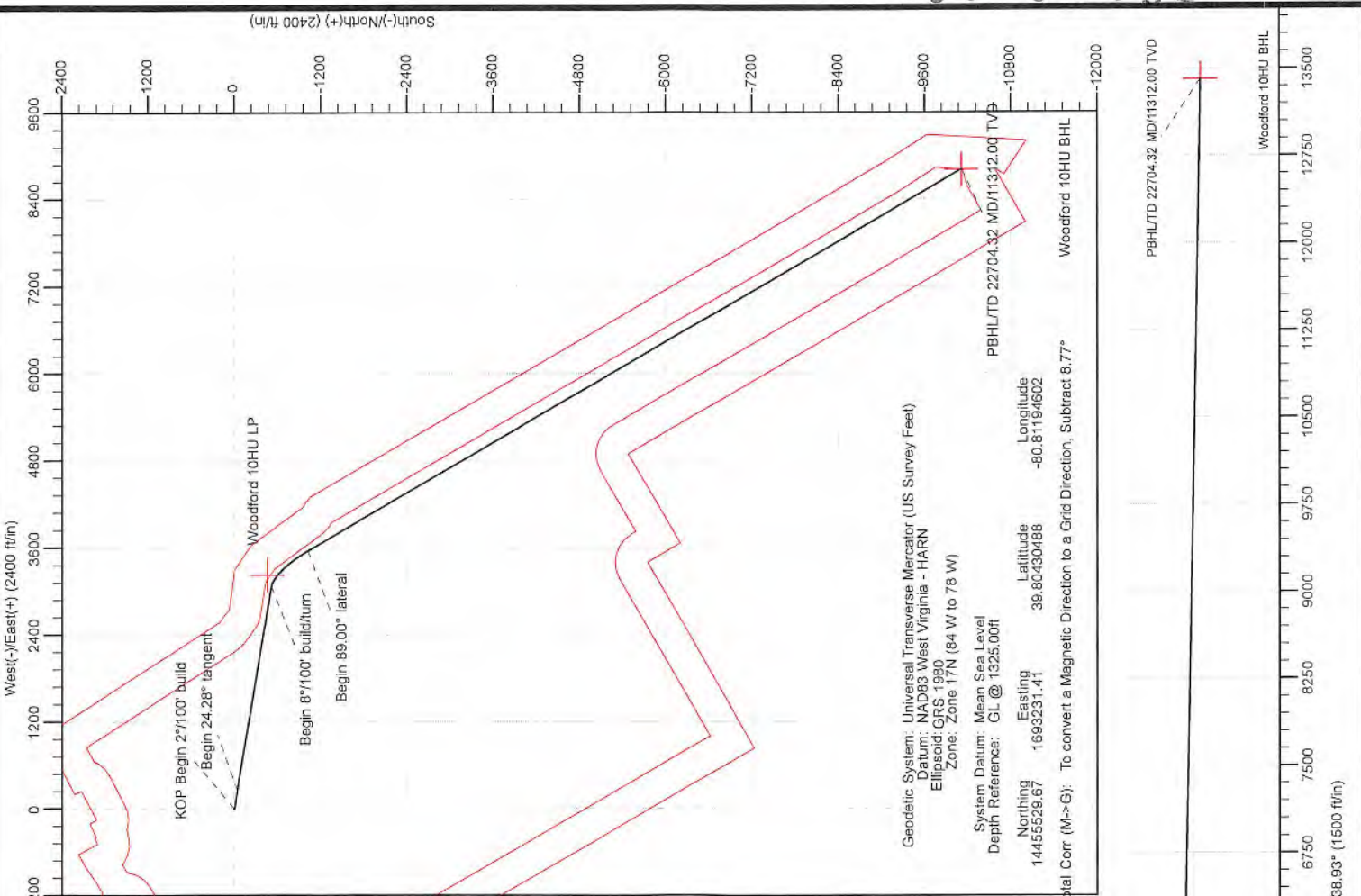
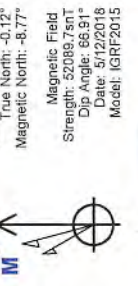


Well: Woodford 10HU (J)
 Site: Woodford
 Project: Marshall County, West Virginia.
 Design: rev1



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V/Sect	Association
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'/'100' build
3	4314.12	24.28	99.56	4278.10	-42.09	249.93	2.00	95.56	195.92	Begin 24.28° tangent
4	11280.91	24.28	99.56	10628.54	-517.84	3075.13	8.00	0.00	2410.62	Begin 8'/'100' build/turn
5	12204.32	89.00	150.00	11128.75	-1020.85	3562.67	8.00	53.36	3110.15	Begin 89.00° lateral
6	22704.32	89.00	150.00	11312.00-10112.73	8811.87	0.00	0.00	0.00	3413.29	PBHL/TD 22704.32 MD/11312.00 TVD



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Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Woodford 10HU (J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1325.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1325.00ft
Site:	Woodford	North Reference:	Grid
Well:	Woodford 10HU (J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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	Woodford				
Site Position:	Lat/Long	Northing:	14,455,471.78 usft	Latitude:	39.80414597
From:		Easting:	1,693,217.70 usft	Longitude:	-80.81199526
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	Woodford 10HU (J)					
Well Position	+N/-S	0.00 ft	Northing:	14,455,529.67 usft	Latitude:	39.80430488
	+E/-W	0.00 ft	Easting:	1,693,231.41 usft	Longitude:	-80.81194602
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level:	1,325.00 ft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/12/2018	-8.65	66.91	52,089.65385589

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	138.93

Plan Survey Tool Program	Date	5/19/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,704.32 rev1 (Original Hole)	MWD MWD - Standard	

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Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,314.12	24.28	99.56	4,278.10	-42.09	249.93	2.00	2.00	0.00	99.56	
11,280.91	24.28	99.56	10,628.54	-517.84	3,075.13	0.00	0.00	0.00	0.00	
12,204.32	89.00	150.00	11,128.75	-1,020.85	3,562.67	8.00	7.01	5.46	53.36	
22,704.32	89.00	150.00	11,312.00	-10,112.73	8,811.87	0.00	0.00	0.00	0.00	Woodford 10HU BHL

WV Department of Environmental Protection

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Woodford
 Well: Woodford 10HU (J)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Woodford 10HU (J)
 TVD Reference: GL @ 1325.00ft
 MD Reference: GL @ 1325.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

WV Department of Environmental Protection

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194802
100.00	0.00	0.00	100.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
200.00	0.00	0.00	200.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
300.00	0.00	0.00	300.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
400.00	0.00	0.00	400.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
500.00	0.00	0.00	500.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
600.00	0.00	0.00	600.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
700.00	0.00	0.00	700.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
800.00	0.00	0.00	800.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
900.00	0.00	0.00	900.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,455,529.67	1,693,231.41	39.80430488	-80.81194602
KOP Begin 2°/100' build									
3,200.00	2.00	99.56	3,199.98	-0.29	1.72	14,455,529.38	1,693,233.13	39.80430408	-80.81193990
3,300.00	4.00	99.56	3,299.84	-1.16	6.88	14,455,528.51	1,693,238.29	39.80430166	-80.81192153
3,400.00	6.00	99.56	3,399.45	-2.61	15.48	14,455,527.06	1,693,246.88	39.80429764	-80.81189094
3,500.00	8.00	99.56	3,498.70	-4.63	27.49	14,455,525.04	1,693,258.90	39.80429201	-80.81184816
3,600.00	10.00	99.56	3,597.47	-7.23	42.92	14,455,522.44	1,693,274.33	39.80428479	-80.81179326
3,700.00	12.00	99.56	3,695.62	-10.40	61.73	14,455,519.27	1,693,293.14	39.80427598	-80.81172629
3,800.00	14.00	99.56	3,793.06	-14.13	83.91	14,455,515.54	1,693,315.32	39.80426559	-80.81164734
3,900.00	16.00	99.56	3,889.64	-18.43	109.44	14,455,511.24	1,693,340.84	39.80425364	-80.81155650
4,000.00	18.00	99.56	3,985.27	-23.28	138.27	14,455,506.39	1,693,369.67	39.80424014	-80.81145388
4,100.00	20.00	99.56	4,079.82	-28.69	170.37	14,455,500.98	1,693,401.78	39.80422511	-80.81133962
4,200.00	22.00	99.56	4,173.17	-34.64	205.71	14,455,495.03	1,693,437.12	39.80420856	-80.81121384
4,300.00	24.00	99.56	4,265.21	-41.13	244.24	14,455,488.54	1,693,475.64	39.80419052	-80.81107670
4,314.12	24.28	99.56	4,278.10	-42.09	249.93	14,455,487.58	1,693,481.34	39.80418785	-80.81105643
Begin 24.28° tangent									
4,400.00	24.28	99.56	4,356.38	-47.95	284.76	14,455,481.72	1,693,516.16	39.80417155	-80.81093248
4,500.00	24.28	99.56	4,447.54	-54.78	325.31	14,455,474.89	1,693,556.72	39.80415256	-80.81078814
4,600.00	24.28	99.56	4,538.69	-61.61	365.86	14,455,468.06	1,693,597.27	39.80413357	-80.81064380
4,700.00	24.28	99.56	4,629.84	-68.44	406.41	14,455,461.23	1,693,637.82	39.80411458	-80.81049946
4,800.00	24.28	99.56	4,720.99	-75.27	446.97	14,455,454.40	1,693,678.37	39.80409559	-80.81035512
4,900.00	24.28	99.56	4,812.15	-82.10	487.52	14,455,447.57	1,693,718.93	39.80407660	-80.81021078
5,000.00	24.28	99.56	4,903.30	-88.93	528.07	14,455,440.74	1,693,759.48	39.80405761	-80.81006644



Planning Report - Geographic

51 02152

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Woodford
 Well: Woodford 10HU (J)
 Wellbore: Original Hole
 Design: rev1

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

Well Woodford 10HU (J) RECEIVED
 GL @ 1325.00ft Office of Oil and Gas
 GL @ 1325.00ft
 Grid
 Minimum Curvature
 DEC 17 2018

WV Department of
 Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.00	24.28	99.56	4,994.45	-95.75	568.62	14,455,433.91	1,693,800.03	39.80403862	-80.80992210
5,200.00	24.28	99.56	5,085.61	-102.58	609.18	14,455,427.09	1,693,840.58	39.80401963	-80.80977776
5,300.00	24.28	99.56	5,176.76	-109.41	649.73	14,455,420.26	1,693,881.14	39.80400064	-80.80963342
5,400.00	24.28	99.56	5,267.91	-116.24	690.28	14,455,413.43	1,693,921.69	39.80398165	-80.80948908
5,500.00	24.28	99.56	5,359.07	-123.07	730.83	14,455,406.60	1,693,962.24	39.80396265	-80.80934475
5,600.00	24.28	99.56	5,450.22	-129.90	771.38	14,455,399.77	1,694,002.79	39.80394366	-80.80920041
5,700.00	24.28	99.56	5,541.37	-136.73	811.94	14,455,392.94	1,694,043.34	39.80392467	-80.80905607
5,800.00	24.28	99.56	5,632.52	-143.56	852.49	14,455,386.11	1,694,083.90	39.80390568	-80.80891173
5,900.00	24.28	99.56	5,723.68	-150.38	893.04	14,455,379.28	1,694,124.45	39.80388669	-80.80876739
6,000.00	24.28	99.56	5,814.83	-157.21	933.59	14,455,372.46	1,694,165.00	39.80386770	-80.80862305
6,100.00	24.28	99.56	5,905.98	-164.04	974.15	14,455,365.63	1,694,205.55	39.80384870	-80.80847872
6,200.00	24.28	99.56	5,997.14	-170.87	1,014.70	14,455,358.80	1,694,246.11	39.80382971	-80.80833438
6,300.00	24.28	99.56	6,088.29	-177.70	1,055.25	14,455,351.97	1,694,286.66	39.80381072	-80.80819004
6,400.00	24.28	99.56	6,179.44	-184.53	1,095.80	14,455,345.14	1,694,327.21	39.80379173	-80.80804570
6,500.00	24.28	99.56	6,270.60	-191.36	1,136.36	14,455,338.31	1,694,367.76	39.80377273	-80.80790136
6,600.00	24.28	99.56	6,361.75	-198.19	1,176.91	14,455,331.48	1,694,408.31	39.80375374	-80.80775703
6,700.00	24.28	99.56	6,452.90	-205.02	1,217.46	14,455,324.65	1,694,448.87	39.80373475	-80.80761269
6,800.00	24.28	99.56	6,544.05	-211.84	1,258.01	14,455,317.82	1,694,489.42	39.80371575	-80.80746835
6,900.00	24.28	99.56	6,635.21	-218.67	1,298.57	14,455,311.00	1,694,529.97	39.80369676	-80.80732401
7,000.00	24.28	99.56	6,726.36	-225.50	1,339.12	14,455,304.17	1,694,570.52	39.80367777	-80.80717968
7,100.00	24.28	99.56	6,817.51	-232.33	1,379.67	14,455,297.34	1,694,611.08	39.80365877	-80.80703534
7,200.00	24.28	99.56	6,908.67	-239.16	1,420.22	14,455,290.51	1,694,651.63	39.80363978	-80.80689100
7,300.00	24.28	99.56	6,999.82	-245.99	1,460.78	14,455,283.68	1,694,692.18	39.80362079	-80.80674666
7,400.00	24.28	99.56	7,090.97	-252.82	1,501.33	14,455,276.85	1,694,732.73	39.80360179	-80.80660233
7,500.00	24.28	99.56	7,182.13	-259.65	1,541.88	14,455,270.02	1,694,773.29	39.80358280	-80.80645799
7,600.00	24.28	99.56	7,273.28	-266.48	1,582.43	14,455,263.19	1,694,813.84	39.80356380	-80.80631365
7,700.00	24.28	99.56	7,364.43	-273.30	1,622.98	14,455,256.36	1,694,854.39	39.80354481	-80.80616932
7,800.00	24.28	99.56	7,455.58	-280.13	1,663.54	14,455,249.54	1,694,894.94	39.80352581	-80.80602498
7,900.00	24.28	99.56	7,546.74	-286.96	1,704.09	14,455,242.71	1,694,935.49	39.80350682	-80.80588064
8,000.00	24.28	99.56	7,637.89	-293.79	1,744.64	14,455,235.88	1,694,976.05	39.80348782	-80.80573631
8,100.00	24.28	99.56	7,729.04	-300.62	1,785.19	14,455,229.05	1,695,016.60	39.80346883	-80.80559197
8,200.00	24.28	99.56	7,820.20	-307.45	1,825.75	14,455,222.22	1,695,057.15	39.80344983	-80.80544763
8,300.00	24.28	99.56	7,911.35	-314.28	1,866.30	14,455,215.39	1,695,097.70	39.80343083	-80.80530330
8,400.00	24.28	99.56	8,002.50	-321.11	1,906.85	14,455,208.56	1,695,138.26	39.80341184	-80.80515896
8,500.00	24.28	99.56	8,093.66	-327.94	1,947.40	14,455,201.73	1,695,178.81	39.80339284	-80.80501462
8,600.00	24.28	99.56	8,184.81	-334.76	1,987.96	14,455,194.91	1,695,219.36	39.80337384	-80.80487029
8,700.00	24.28	99.56	8,275.96	-341.59	2,028.51	14,455,188.08	1,695,259.91	39.80335485	-80.80472595
8,800.00	24.28	99.56	8,367.11	-348.42	2,069.06	14,455,181.25	1,695,300.47	39.80333585	-80.80458162
8,900.00	24.28	99.56	8,458.27	-355.25	2,109.61	14,455,174.42	1,695,341.02	39.80331685	-80.80443728
9,000.00	24.28	99.56	8,549.42	-362.08	2,150.17	14,455,167.59	1,695,381.57	39.80329786	-80.80429294
9,100.00	24.28	99.56	8,640.57	-368.91	2,190.72	14,455,160.76	1,695,422.12	39.80327886	-80.80414861
9,200.00	24.28	99.56	8,731.73	-375.74	2,231.27	14,455,153.93	1,695,462.67	39.80325986	-80.80400427
9,300.00	24.28	99.56	8,822.88	-382.57	2,271.82	14,455,147.10	1,695,503.23	39.80324086	-80.80385994
9,400.00	24.28	99.56	8,914.03	-389.39	2,312.37	14,455,140.27	1,695,543.78	39.80322187	-80.80371560
9,500.00	24.28	99.56	9,005.19	-396.22	2,352.93	14,455,133.45	1,695,584.33	39.80320287	-80.80357127
9,600.00	24.28	99.56	9,096.34	-403.05	2,393.48	14,455,126.62	1,695,624.88	39.80318387	-80.80342693
9,700.00	24.28	99.56	9,187.49	-409.88	2,434.03	14,455,119.79	1,695,665.44	39.80316487	-80.80328260
9,800.00	24.28	99.56	9,278.64	-416.71	2,474.58	14,455,112.96	1,695,705.99	39.80314587	-80.80313826
9,900.00	24.28	99.56	9,369.80	-423.54	2,515.14	14,455,106.13	1,695,746.54	39.80312687	-80.80299393
10,000.00	24.28	99.56	9,460.95	-430.37	2,555.69	14,455,099.30	1,695,787.09	39.80310787	-80.80284959
10,100.00	24.28	99.56	9,552.10	-437.20	2,596.24	14,455,092.47	1,695,827.65	39.80308887	-80.80270526
10,200.00	24.28	99.56	9,643.26	-444.03	2,636.79	14,455,085.64	1,695,868.20	39.80306987	-80.80256092
10,300.00	24.28	99.56	9,734.41	-450.85	2,677.35	14,455,078.81	1,695,908.75	39.80305087	-80.80241659
10,400.00	24.28	99.56	9,825.56	-457.68	2,717.90	14,455,071.99	1,695,949.30	39.80303188	-80.80227225
10,500.00	24.28	99.56	9,916.72	-464.51	2,758.45	14,455,065.16	1,695,989.85	39.80301288	-80.80212792



RECEIVED

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Woodford
 Well: Woodford 10HU (J)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Woodford 10HU (J) Office of Oil and Gas
 TVD Reference: GL @ 1325.00ft
 MD Reference: GL @ 1325.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

DEC 17 2018

WV Department of Environmental Protection

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,600.00	24.28	99.56	10,007.87	-471.34	2,799.00	14,455,058.33	1,696,030.41	39.80299387	-80.80198358
10,700.00	24.28	99.56	10,099.02	-478.17	2,839.56	14,455,051.50	1,696,070.96	39.80297487	-80.80183925
10,800.00	24.28	99.56	10,190.18	-485.00	2,880.11	14,455,044.67	1,696,111.51	39.80295587	-80.80169491
10,900.00	24.28	99.56	10,281.33	-491.83	2,920.66	14,455,037.84	1,696,152.06	39.80293687	-80.80155058
11,000.00	24.28	99.56	10,372.48	-498.66	2,961.21	14,455,031.01	1,696,192.62	39.80291787	-80.80140624
11,100.00	24.28	99.56	10,463.63	-505.49	3,001.77	14,455,024.18	1,696,233.17	39.80289887	-80.80126191
11,200.00	24.28	99.56	10,554.79	-512.31	3,042.32	14,455,017.36	1,696,273.72	39.80287987	-80.80111758
11,280.91	24.28	99.56	10,628.54	-517.84	3,075.13	14,455,011.83	1,696,306.53	39.80286450	-80.80100080
Begin 8°/100' build/turn									
11,300.00	25.22	102.44	10,645.88	-519.37	3,082.97	14,455,010.30	1,696,314.37	39.80286025	-80.80097288
11,400.00	30.87	114.56	10,734.17	-534.64	3,127.18	14,454,995.03	1,696,358.58	39.80281803	-80.80081559
11,500.00	37.32	123.05	10,816.99	-561.88	3,176.00	14,454,967.79	1,696,407.40	39.80274293	-80.80064199
11,600.00	44.21	129.29	10,892.71	-600.55	3,228.47	14,454,929.12	1,696,459.88	39.80263640	-80.80045546
11,700.00	51.37	134.13	10,959.88	-649.90	3,283.58	14,454,879.77	1,696,514.99	39.80250054	-80.80025964
11,800.00	58.69	138.07	11,017.18	-708.97	3,340.25	14,454,820.70	1,696,571.66	39.80233797	-80.80005832
11,900.00	66.11	141.44	11,063.49	-776.61	3,397.39	14,454,753.06	1,696,628.79	39.80215186	-80.79985545
12,000.00	73.60	144.44	11,097.91	-851.51	3,453.86	14,454,678.16	1,696,685.27	39.80194584	-80.79965495
12,100.00	81.13	147.22	11,119.78	-932.20	3,508.59	14,454,597.48	1,696,739.99	39.80172391	-80.79946074
12,200.00	88.67	149.89	11,128.66	-1,017.11	3,560.50	14,454,512.56	1,696,791.90	39.80149040	-80.79927660
12,204.32	89.00	150.00	11,128.75	-1,020.85	3,562.66	14,454,508.82	1,696,794.07	39.80148012	-80.79926892
Begin 89.00° lateral									
12,300.00	89.00	150.00	11,130.42	-1,103.70	3,610.50	14,454,425.98	1,696,841.90	39.80125230	-80.79909928
12,400.00	89.00	150.00	11,132.17	-1,190.28	3,660.49	14,454,339.39	1,696,891.89	39.80101419	-80.79892198
12,500.00	89.00	150.00	11,133.91	-1,276.87	3,710.48	14,454,252.80	1,696,941.88	39.80077609	-80.79874467
12,600.00	89.00	150.00	11,135.66	-1,363.46	3,760.47	14,454,166.21	1,696,991.88	39.80053798	-80.79856737
12,700.00	89.00	150.00	11,137.40	-1,450.05	3,810.47	14,454,079.62	1,697,041.87	39.80029987	-80.79839008
12,800.00	89.00	150.00	11,139.15	-1,536.64	3,860.46	14,453,993.03	1,697,091.86	39.80006177	-80.79821278
12,900.00	89.00	150.00	11,140.89	-1,623.23	3,910.45	14,453,906.44	1,697,141.85	39.79982366	-80.79803548
13,000.00	89.00	150.00	11,142.64	-1,709.82	3,960.44	14,453,819.85	1,697,191.85	39.79958555	-80.79785819
13,100.00	89.00	150.00	11,144.38	-1,796.41	4,010.44	14,453,733.26	1,697,241.84	39.79934744	-80.79768089
13,200.00	89.00	150.00	11,146.13	-1,883.00	4,060.43	14,453,646.67	1,697,291.83	39.79910934	-80.79750360
13,300.00	89.00	150.00	11,147.87	-1,969.59	4,110.42	14,453,560.08	1,697,341.82	39.79887123	-80.79732631
13,400.00	89.00	150.00	11,149.62	-2,056.18	4,160.41	14,453,473.49	1,697,391.81	39.79863312	-80.79714902
13,500.00	89.00	150.00	11,151.36	-2,142.77	4,210.41	14,453,386.91	1,697,441.81	39.79839501	-80.79697173
13,600.00	89.00	150.00	11,153.11	-2,229.36	4,260.40	14,453,300.32	1,697,491.80	39.79815690	-80.79679444
13,700.00	89.00	150.00	11,154.85	-2,315.95	4,310.39	14,453,213.73	1,697,541.79	39.79791879	-80.79661715
13,800.00	89.00	150.00	11,156.60	-2,402.54	4,360.38	14,453,127.14	1,697,591.78	39.79768068	-80.79643987
13,900.00	89.00	150.00	11,158.34	-2,489.12	4,410.38	14,453,040.55	1,697,641.78	39.79744257	-80.79626258
14,000.00	89.00	150.00	11,160.09	-2,575.71	4,460.37	14,452,953.96	1,697,691.77	39.79720446	-80.79608530
14,100.00	89.00	150.00	11,161.83	-2,662.30	4,510.36	14,452,867.37	1,697,741.76	39.79696635	-80.79590802
14,200.00	89.00	150.00	11,163.58	-2,748.89	4,560.35	14,452,780.78	1,697,791.75	39.79672824	-80.79573074
14,300.00	89.00	150.00	11,165.32	-2,835.48	4,610.35	14,452,694.19	1,697,841.74	39.79649013	-80.79555346
14,400.00	89.00	150.00	11,167.07	-2,922.07	4,660.34	14,452,607.60	1,697,891.74	39.79625202	-80.79537618
14,500.00	89.00	150.00	11,168.82	-3,008.66	4,710.33	14,452,521.01	1,697,941.73	39.79601391	-80.79519890
14,600.00	89.00	150.00	11,170.56	-3,095.25	4,760.32	14,452,434.42	1,697,991.72	39.79577580	-80.79502163
14,700.00	89.00	150.00	11,172.31	-3,181.84	4,810.31	14,452,347.84	1,698,041.71	39.79553769	-80.79484435
14,800.00	89.00	150.00	11,174.05	-3,268.43	4,860.31	14,452,261.25	1,698,091.71	39.79529957	-80.79466708
14,900.00	89.00	150.00	11,175.80	-3,355.02	4,910.30	14,452,174.66	1,698,141.70	39.79506146	-80.79448980
15,000.00	89.00	150.00	11,177.54	-3,441.61	4,960.29	14,452,088.07	1,698,191.69	39.79482335	-80.79431253
15,100.00	89.00	150.00	11,179.29	-3,528.20	5,010.28	14,452,001.48	1,698,241.68	39.79458523	-80.79413526
15,200.00	89.00	150.00	11,181.03	-3,614.79	5,060.28	14,451,914.89	1,698,291.68	39.79434712	-80.79395800
15,300.00	89.00	150.00	11,182.78	-3,701.38	5,110.27	14,451,828.30	1,698,341.67	39.79410901	-80.79378073
15,400.00	89.00	150.00	11,184.52	-3,787.97	5,160.26	14,451,741.71	1,698,391.66	39.79387089	-80.79360346
15,500.00	89.00	150.00	11,186.27	-3,874.55	5,210.25	14,451,655.12	1,698,441.65	39.79363278	-80.79342620



Planning Report - Geographic

51 02152

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Woodford 10HU (J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1325.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1325.00ft
Site:	Woodford	North Reference:	Grid
Well:	Woodford 10HU (J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey										WV Department of Environmental Protection	
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude		
15,600.00	89.00	150.00	11,188.01	-3,961.14	5,260.25	14,451,568.53	1,698,491.64	39.79339466	-80.79324893		
15,700.00	89.00	150.00	11,189.76	-4,047.73	5,310.24	14,451,481.94	1,698,541.64	39.79315655	-80.79307167		
15,800.00	89.00	150.00	11,191.50	-4,134.32	5,360.23	14,451,395.35	1,698,591.63	39.79291843	-80.79289441		
15,900.00	89.00	150.00	11,193.25	-4,220.91	5,410.22	14,451,308.77	1,698,641.62	39.79268032	-80.79271715		
16,000.00	89.00	150.00	11,194.99	-4,307.50	5,460.22	14,451,222.18	1,698,691.61	39.79244220	-80.79253989		
16,100.00	89.00	150.00	11,196.74	-4,394.09	5,510.21	14,451,135.59	1,698,741.61	39.79220409	-80.79236263		
16,200.00	89.00	150.00	11,198.48	-4,480.68	5,560.20	14,451,049.00	1,698,791.60	39.79196597	-80.79218538		
16,300.00	89.00	150.00	11,200.23	-4,567.27	5,610.19	14,450,962.41	1,698,841.59	39.79172786	-80.79200812		
16,400.00	89.00	150.00	11,201.97	-4,653.86	5,660.19	14,450,875.82	1,698,891.58	39.79148974	-80.79183087		
16,500.00	89.00	150.00	11,203.72	-4,740.45	5,710.18	14,450,789.23	1,698,941.58	39.79125162	-80.79165362		
16,600.00	89.00	150.00	11,205.47	-4,827.04	5,760.17	14,450,702.64	1,698,991.57	39.79101350	-80.79147636		
16,700.00	89.00	150.00	11,207.21	-4,913.63	5,810.16	14,450,616.05	1,699,041.56	39.79077539	-80.79129911		
16,800.00	89.00	150.00	11,208.96	-5,000.22	5,860.15	14,450,529.46	1,699,091.55	39.79053727	-80.79112186		
16,900.00	89.00	150.00	11,210.70	-5,086.81	5,910.15	14,450,442.87	1,699,141.54	39.79029915	-80.79094462		
17,000.00	89.00	150.00	11,212.45	-5,173.39	5,960.14	14,450,356.28	1,699,191.54	39.79006103	-80.79076737		
17,100.00	89.00	150.00	11,214.19	-5,259.98	6,010.13	14,450,269.69	1,699,241.53	39.78982291	-80.79059012		
17,200.00	89.00	150.00	11,215.94	-5,346.57	6,060.12	14,450,183.11	1,699,291.52	39.78958479	-80.79041288		
17,300.00	89.00	150.00	11,217.68	-5,433.16	6,110.12	14,450,096.52	1,699,341.51	39.78934668	-80.79023564		
17,400.00	89.00	150.00	11,219.43	-5,519.75	6,160.11	14,450,009.93	1,699,391.51	39.78910856	-80.79005840		
17,500.00	89.00	150.00	11,221.17	-5,606.34	6,210.10	14,449,923.34	1,699,441.50	39.78887044	-80.78988116		
17,600.00	89.00	150.00	11,222.92	-5,692.93	6,260.09	14,449,836.75	1,699,491.49	39.78863232	-80.78970392		
17,700.00	89.00	150.00	11,224.66	-5,779.52	6,310.09	14,449,750.16	1,699,541.48	39.78839420	-80.78952668		
17,800.00	89.00	150.00	11,226.41	-5,866.11	6,360.08	14,449,663.57	1,699,591.47	39.78815607	-80.78934944		
17,900.00	89.00	150.00	11,228.15	-5,952.70	6,410.07	14,449,576.98	1,699,641.47	39.78791795	-80.78917221		
18,000.00	89.00	150.00	11,229.90	-6,039.29	6,460.06	14,449,490.39	1,699,691.46	39.78767983	-80.78899497		
18,100.00	89.00	150.00	11,231.64	-6,125.88	6,510.06	14,449,403.80	1,699,741.45	39.78744171	-80.78881774		
18,200.00	89.00	150.00	11,233.39	-6,212.47	6,560.05	14,449,317.21	1,699,791.44	39.78720359	-80.78864051		
18,300.00	89.00	150.00	11,235.13	-6,299.06	6,610.04	14,449,230.62	1,699,841.44	39.78696547	-80.78846328		
18,400.00	89.00	150.00	11,236.88	-6,385.65	6,660.03	14,449,144.04	1,699,891.43	39.78672735	-80.78828605		
18,500.00	89.00	150.00	11,238.62	-6,472.24	6,710.03	14,449,057.45	1,699,941.42	39.78648922	-80.78810882		
18,600.00	89.00	150.00	11,240.37	-6,558.82	6,760.02	14,448,970.86	1,699,991.41	39.78625110	-80.78793159		
18,700.00	89.00	150.00	11,242.12	-6,645.41	6,810.01	14,448,884.27	1,700,041.41	39.78601298	-80.78775436		
18,800.00	89.00	150.00	11,243.86	-6,732.00	6,860.00	14,448,797.68	1,700,091.40	39.78577485	-80.78757714		
18,900.00	89.00	150.00	11,245.61	-6,818.59	6,910.00	14,448,711.09	1,700,141.39	39.78553673	-80.78739992		
19,000.00	89.00	150.00	11,247.35	-6,905.18	6,959.99	14,448,624.50	1,700,191.38	39.78529861	-80.78722269		
19,100.00	89.00	150.00	11,249.10	-6,991.77	7,009.98	14,448,537.91	1,700,241.37	39.78506048	-80.78704547		
19,200.00	89.00	150.00	11,250.84	-7,078.36	7,059.97	14,448,451.32	1,700,291.37	39.78482236	-80.78686825		
19,300.00	89.00	150.00	11,252.59	-7,164.95	7,109.96	14,448,364.73	1,700,341.36	39.78458423	-80.78669103		
19,400.00	89.00	150.00	11,254.33	-7,251.54	7,159.96	14,448,278.14	1,700,391.35	39.78434611	-80.78651382		
19,500.00	89.00	150.00	11,256.08	-7,338.13	7,209.95	14,448,191.55	1,700,441.34	39.78410798	-80.78633660		
19,600.00	89.00	150.00	11,257.82	-7,424.72	7,259.94	14,448,104.97	1,700,491.34	39.78386986	-80.78615939		
19,700.00	89.00	150.00	11,259.57	-7,511.31	7,309.93	14,448,018.38	1,700,541.33	39.78363173	-80.78598217		
19,800.00	89.00	150.00	11,261.31	-7,597.90	7,359.93	14,447,931.79	1,700,591.32	39.78339360	-80.78580496		
19,900.00	89.00	150.00	11,263.06	-7,684.49	7,409.92	14,447,845.20	1,700,641.31	39.78315548	-80.78562775		
20,000.00	89.00	150.00	11,264.80	-7,771.08	7,459.91	14,447,758.61	1,700,691.31	39.78291735	-80.78545054		
20,100.00	89.00	150.00	11,266.55	-7,857.66	7,509.90	14,447,672.02	1,700,741.30	39.78267922	-80.78527333		
20,200.00	89.00	150.00	11,268.29	-7,944.25	7,559.90	14,447,585.43	1,700,791.29	39.78244110	-80.78509612		
20,300.00	89.00	150.00	11,270.04	-8,030.84	7,609.89	14,447,498.84	1,700,841.28	39.78220297	-80.78491892		
20,400.00	89.00	150.00	11,271.78	-8,117.43	7,659.88	14,447,412.25	1,700,891.27	39.78196484	-80.78474171		
20,500.00	89.00	150.00	11,273.53	-8,204.02	7,709.87	14,447,325.66	1,700,941.27	39.78172671	-80.78456451		
20,600.00	89.00	150.00	11,275.27	-8,290.61	7,759.87	14,447,239.07	1,700,991.26	39.78148859	-80.78438730		
20,700.00	89.00	150.00	11,277.02	-8,377.20	7,809.86	14,447,152.48	1,701,041.25	39.78125046	-80.78421010		
20,800.00	89.00	150.00	11,278.77	-8,463.79	7,859.85	14,447,065.90	1,701,091.24	39.78101233	-80.78403290		
20,900.00	89.00	150.00	11,280.51	-8,550.38	7,909.84	14,446,979.31	1,701,141.24	39.78077420	-80.78385570		
21,000.00	89.00	150.00	11,282.26	-8,636.97	7,959.84	14,446,892.72	1,701,191.23	39.78053607	-80.78367851		



Planning Report - Geographic

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Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Woodford 10HU (J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1325.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1325.00ft
Site:	Woodford	North Reference:	Grid
Well:	Woodford 10HU (J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		WV Department of Environmental Protection
Design:	rev1		

DEC 17 2018

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
21,100.00	89.00	150.00	11,284.00	-8,723.56	8,009.83	14,446,806.13	1,701,241.22	39.78029794	-80.78350131	
21,200.00	89.00	150.00	11,285.75	-8,810.15	8,059.82	14,446,719.54	1,701,291.21	39.78005981	-80.78332411	
21,300.00	89.00	150.00	11,287.49	-8,896.74	8,109.81	14,446,632.95	1,701,341.20	39.77982168	-80.78314692	
21,400.00	89.00	150.00	11,289.24	-8,983.33	8,159.80	14,446,546.36	1,701,391.20	39.77958355	-80.78296973	
21,500.00	89.00	150.00	11,290.98	-9,069.92	8,209.80	14,446,459.77	1,701,441.19	39.77934542	-80.78279254	
21,600.00	89.00	150.00	11,292.73	-9,156.50	8,259.79	14,446,373.18	1,701,491.18	39.77910729	-80.78261534	
21,700.00	89.00	150.00	11,294.47	-9,243.09	8,309.78	14,446,286.59	1,701,541.17	39.77886915	-80.78243816	
21,800.00	89.00	150.00	11,296.22	-9,329.68	8,359.77	14,446,200.00	1,701,591.17	39.77863102	-80.78226097	
21,900.00	89.00	150.00	11,297.96	-9,416.27	8,409.77	14,446,113.41	1,701,641.16	39.77839289	-80.78208378	
22,000.00	89.00	150.00	11,299.71	-9,502.86	8,459.76	14,446,026.83	1,701,691.15	39.77815476	-80.78190659	
22,100.00	89.00	150.00	11,301.45	-9,589.45	8,509.75	14,445,940.24	1,701,741.14	39.77791663	-80.78172941	
22,200.00	89.00	150.00	11,303.20	-9,676.04	8,559.74	14,445,853.65	1,701,791.14	39.77767849	-80.78155223	
22,300.00	89.00	150.00	11,304.94	-9,762.63	8,609.74	14,445,767.06	1,701,841.13	39.77744036	-80.78137505	
22,400.00	89.00	150.00	11,306.69	-9,849.22	8,659.73	14,445,680.47	1,701,891.12	39.77720223	-80.78119786	
22,500.00	89.00	150.00	11,308.43	-9,935.81	8,709.72	14,445,593.88	1,701,941.11	39.77696409	-80.78102068	
22,600.00	89.00	150.00	11,310.18	-10,022.40	8,759.71	14,445,507.29	1,701,991.10	39.77672596	-80.78084351	
22,700.00	89.00	150.00	11,311.92	-10,108.99	8,809.71	14,445,420.70	1,702,041.10	39.77648783	-80.78066633	
22,704.32	89.00	150.00	11,312.00	-10,112.73	8,811.87	14,445,416.96	1,702,043.26	39.77647753	-80.78065867	

PBHL/TD 22704.32 MD/11312.00 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Woodford 10HU LP - hit/miss target - Shape - Point	0.00	0.00	11,117.00	-460.30	3,235.86	14,455,069.37	1,696,467.26	39.80302153	-80.80042806	
- plan misses target center by 249.56ft at 11685.63ft MD (10950.81 TVD, -642.19 N, 3275.54 E)										
Woodford 10HU BHL - plan hits target center - Point	0.00	0.00	11,312.00	-10,112.73	8,811.87	14,445,416.96	1,702,043.26	39.77647753	-80.78065867	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
3,100.00	3,100.00	0.00	0.00	KOP Begin 2°/100' build	
4,314.12	4,278.10	-42.09	249.93	Begin 24.28° tangent	
11,280.91	10,628.54	-517.84	3,075.13	Begin 8°/100' build/turn	
12,204.32	11,128.75	-1,020.85	3,562.66	Begin 89.00° lateral	
22,704.32	11,312.00	-10,112.73	8,811.87	PBHL/TD 22704.32 MD/11312.00 TVD	

WW-9
(4/16)

51 02152

API Number 47 - 051 -
Operator's Well No. Woodford 10HU

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

RECEIVED
Office of Oil and Gas

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

DEC 17 2018

Operator Name Tug Hill Operating, LLC OP Code 494510851 WV Department of
Watershed (HUC 10) French Creek - Ohio River Quadrangle Powhatan Point 7.5' Environmental Protection

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? 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 / WW0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386428)

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

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

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

Company Official Signature Amy Miller

Company Official (Typed Name) Amy Miller

Company Official Title Permitting Specialist - Appalachia Region

Subscribed and sworn before me this 14th day of DECEMBER, 20 18

[Signature] Notary Public
My commission expires 2.10.2020

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Chester Arthur West IV, Notary Public
Pine Twp., Allegheny County
My Commission Expires Feb. 10, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 44.34 acres 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

RECEIVED Office of Oil and Gas

DEC 17 2018

WV Department of Environmental Protection

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: [Signature]

Comments: [Blank lines for text entry]

Title: Oil and Gas Inspector Date: 12/14/2018

Field Reviewed? (X) Yes () No

WW-9

PROPOSED WOODFORD 10HU
SHEET 1

SUPPLEMENT PG 1

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

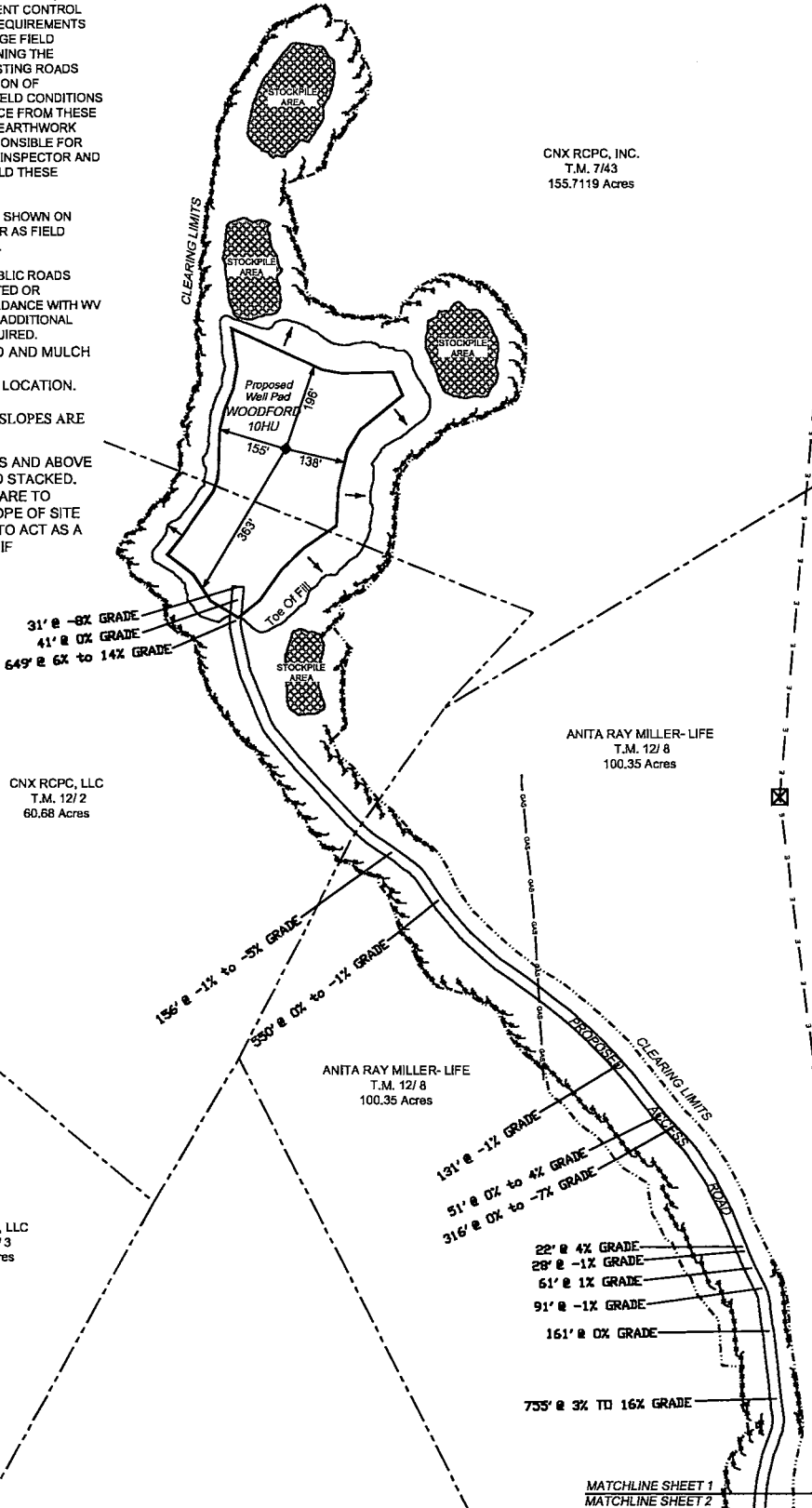
INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

CNX RCPC, INC.
T.M. 7/43
155.7119 Acres



CNX RCPC, LLC
T.M. 12/2
60.68 Acres

ANITA RAY MILLER-LIFE
T.M. 12/ 8
100.35 Acres

ANITA RAY MILLER-LIFE
T.M. 12/ 8
100.35 Acres

CNX RCPC, LLC
T.M. 12/ 3
62.30 Acres

RECEIVED
Office of Oil and Gas

DEC 17 2018

WV Department of
Environmental Protection

OVERHEAD POWERLINE

LEGEND

- Note:
- ⊙ — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 - Silt Fence and or Sediment and Erosion Control Measure.
 - Surface Boundary

MATCHLINE SHEET 1
MATCHLINE SHEET 2

DATE: 07-27-2018

PROJECT NO: 494510851

DRAWN BY: J.A.H.

DRAWING NOT TO SCALE

WW-9

PROPOSED WOODFORD 10HU
SHEET 2

MATCHLINE SHEET 1
MATCHLINE SHEET 2

SUPPLEMENT PG 1

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.

ROBERT WM RIGGENBACH ET UX
T.M. 12/7
104.231 Acres

LINDA HAMILTON ET AL
T.M. 12/ 13
41.887 Acres

RAYMOND K MILLER
T.M. 12/ 7.2
4.66 Acres

RAYMOND K MILLER
T.M. 12/ 7.1
1.609 Acres

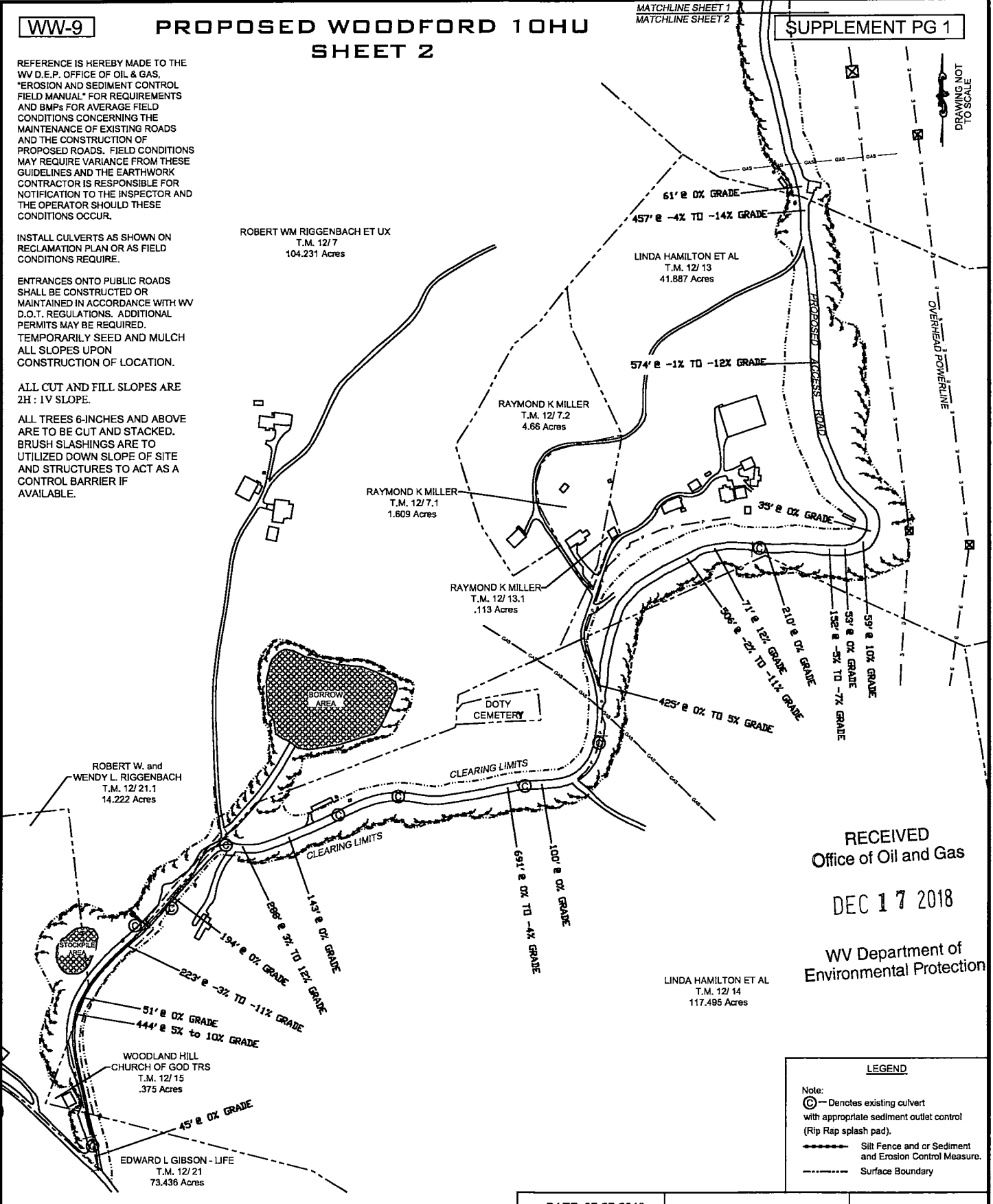
RAYMOND K MILLER
T.M. 12/ 13.1
.113 Acres

ROBERT W. and
WENDY L. RIGGENBACH
T.M. 12/ 21.1
14.222 Acres

LINDA HAMILTON ET AL
T.M. 12/ 14
117.495 Acres

WOODLAND HILL
CHURCH OF GOD TRS
T.M. 12/ 15
.375 Acres

EDWARD L GIBSON - LIFE
T.M. 12/ 21
73.436 Acres



DRAWING NOT
TO SCALE

RECEIVED
Office of Oil and Gas

DEC 17 2018

WV Department of
Environmental Protection

LEGEND

Note:
 (C) - Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 --- Silt Fence and or Sediment and Erosion Control Measure.
 - - - Surface Boundary

51 02152



Well Site Safety Plan
Tug Hill Operating, LLC

JW
11/29/18

Well Name: Woodford 10HU

Pad Location: Woodford

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

NORTHING -4,406,054.25

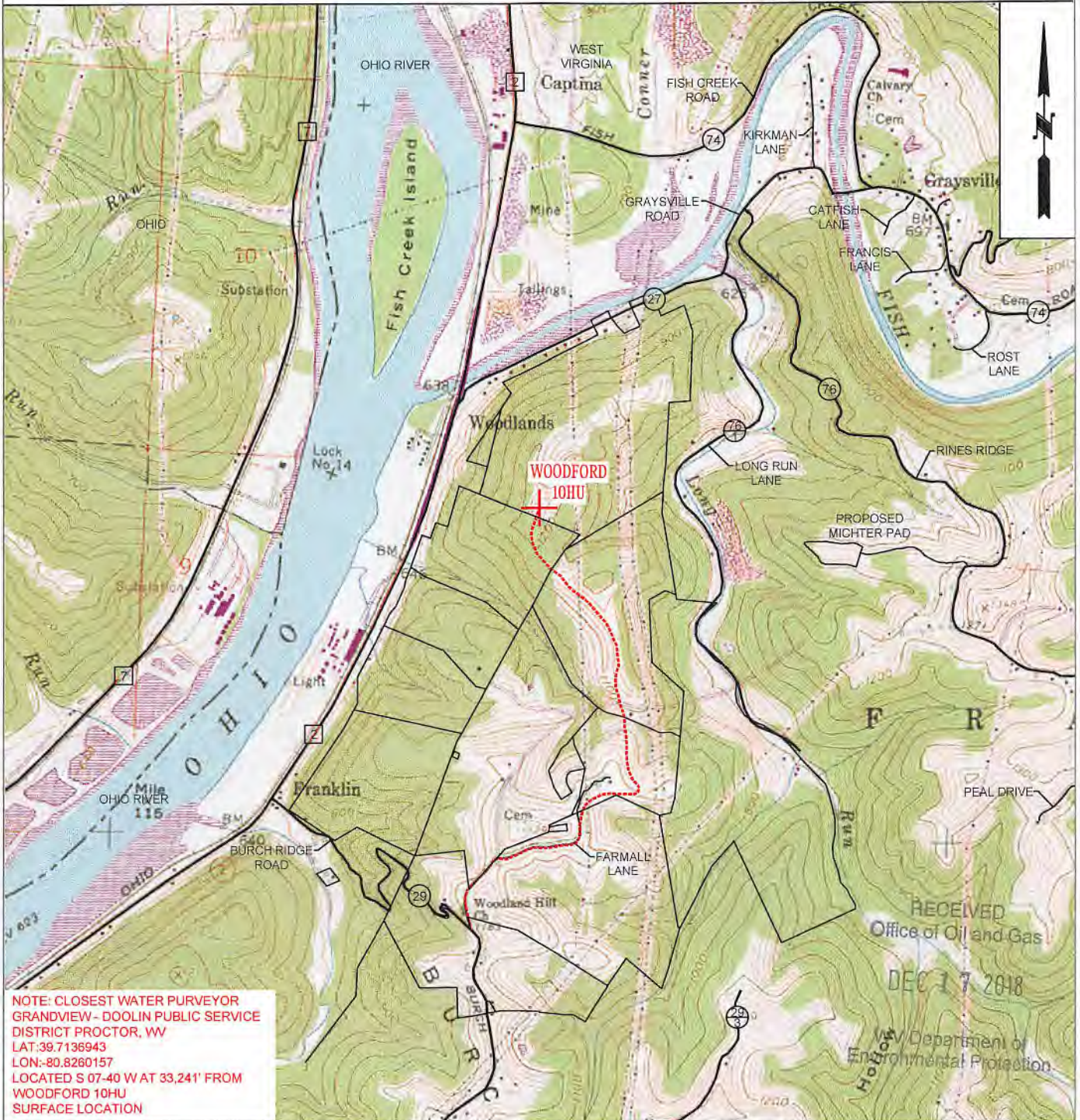
EASTING -516,097.97

November 2018

WW-9


PROPOSED WOODFORD 10HU

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT: 39.7136943
LON: -80.8260157
LOCATED S 07-40 W AT 33,241' FROM
WOODFORD 10HU
SURFACE LOCATION

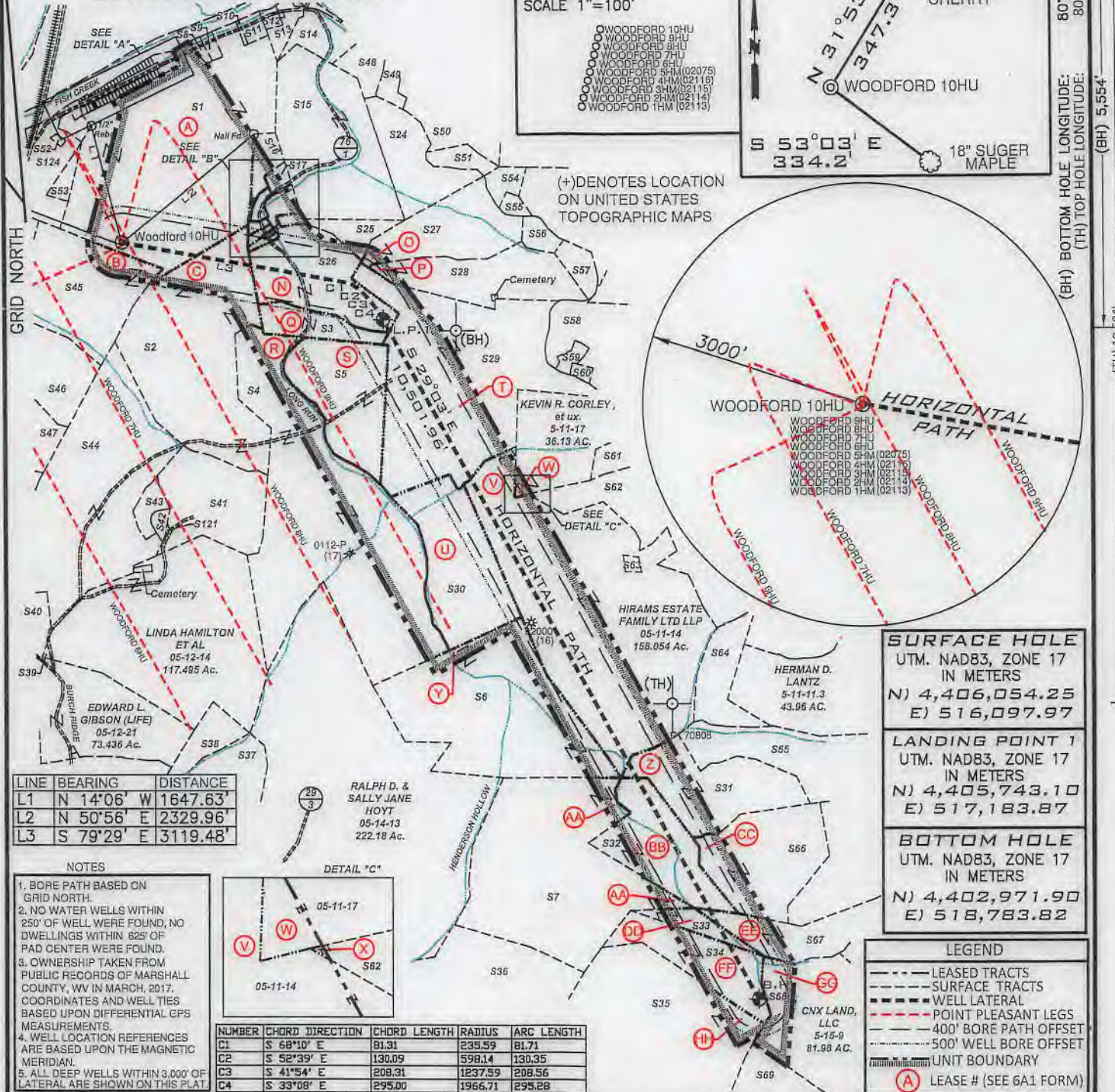
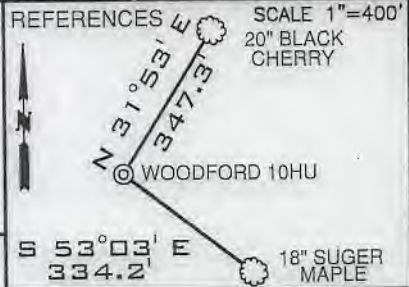
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Office of Oil and Gas
DEC 17 2018
WV Department of
Environmental Protection

 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	WOODFORD
			SCALE: 1" = 2000'	DATE: DATE: 07-27-2018

WOODFORD LEASE WELL 10HU 636.4012± ACRES

(BH) 8,673' (TH) 5,748'
TOP HOLE LATITUDE: 39°50'00"
BOTTOM HOLE LATITUDE: 39°47'30"

DETAIL
SKETCH "A"
SCALE 1"=100'



LINE	BEARING	DISTANCE
L1	N 14°06' W	1647.63'
L2	N 50°56' E	2329.96'
L3	S 79°29' E	3119.48'

- NOTES**
- BORE PATH BASED ON GRID NORTH.
 - NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 825' OF PAD CENTER WERE FOUND.
 - OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN MARCH, 2017. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
 - WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.
 - ALL DEEP WELLS WITHIN 3,000' OF LATERAL ARE SHOWN ON THIS PLAT.



NUMBER	CHORD DIRECTION	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 68°10' E	81.31	235.59	81.71
C2	S 52°39' E	130.09	598.14	130.35
C3	S 41°54' E	208.31	1237.59	208.56
C4	S 33°08' E	295.00	1966.71	295.28

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,406,054.25
E) 516,097.97

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,405,743.10
E) 517,183.87

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,971.90
E) 518,783.82

- LEGEND**
- LEASE TRACTS
 - - - SURFACE TRACTS
 - - - WELL LATERAL
 - - - POINT PLEASANT LEGS
 - - - 400' BORE PATH OFFSET
 - - - 500' WELL BORE OFFSET
 - UNIT BOUNDARY
 - (A) LEASE # (SEE 6A1 FORM)

FILE NUMBER _____

DRAWING NUMBER WOODFORD_10HU_REV1

SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

David L Jackson

P.S. 708



JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-823-5851



WVDEP
OFFICE OF OIL & GAS
601 57TH STREET, SE
CHARLESTON, WV 25304

DATE: DECEMBER 14, 2018

REVISED DATE: JANUARY 04, 2019

OPERATORS WELL NO. Woodford 10HU

API WELL NO. _____

STATE 47 COUNTY 051 PERMIT 02152 H6A

LOCATION ELEVATION 1233.51' WATERSHED (HUC 10) FRENCH CREEK - OHIO RIVER

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER CNX LAND, LLC ACREAGE 155.7119

OIL & GAS ROYALTY OWNER HG ENERGY II APPALACHIA LC (TRACT 5-7-43) LEASE ACREAGE 155.7119

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION

PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,350' TMD: 22,704'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM

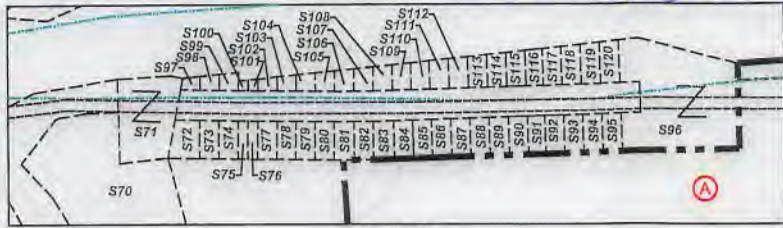
ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

COUNTY NAME
PERMIT

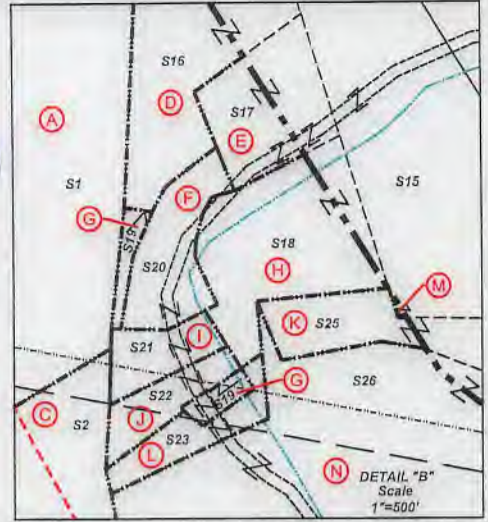
Form WVB

**WOODFORD LEASE
WELL 10HU
636.4012± ACRES**

47-051-02152 H6A



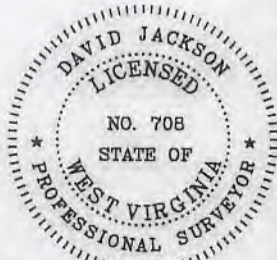
DETAIL "A"
Scale 1"=500'



DETAIL "B"
Scale 1"=500'

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S1 (A)	05-07-43	CNX LAND, LLC	155.7119
S2 (C)	05-12-08	Amita Rae Miller (Life)	100.35
S3 (Q)	05-12-10	Consolidation Coal Co./ Murray Energy	13.76
S4 (R)	05-12-12.1	Lionel L. Persinger, Et Ux.	148.09
S5 (S)	05-12-12	Lionel L. Persinger, Et Ux.	45
S6 (Y)	05-11-15	Lionel L. Persinger, Et Ux.	93
S7 (AA)	05-15-01	Marcus Sharp & David Schlabach, Hrs.	121
S8	05-7B-49	Cassidy Rain Carpenter	1.1441
S9	05-7B-48	Cassidy Rain Carpenter	1.325
S10	05-07-43.3	M. Frank Mason	0.327
S11	05-07-43.2	M. Frank Mason	1.36
S12	05-07-38	John K. Persinger, Et Ux.	2.65
S13	05-07-36	John Persinger	4.329
S14	05-07-35	Samuel L. Persinger	10.708
S15 (M)	05-07-39	Lionel L. Persinger, et ux	57
S16 (D)	05-07-42.1	Holly Rice	5.99
S17 (E)	05-07-41	James A. Wade	1
S18 (H)	05-07-42.5	Matthew V. Conner, et al	3.791
S19 (G)	05-07-42	Tracy M. Kesterson	0.54
S20 (F)	05-07-44	Crystal B. Darrah	1.726
S21 (I)	05-07-42.2	Steven & Rhonda Lloyd	0.85
S22 (J)	05-07-42.3	Joshua David Hartley	0.87
S23 (L)	05-07-42.4	Lionel & Mary Lee Persinger	0.94
S24	05-07-33	William N. Roupe	24.60
S25 (K)	05-12-09	Lionel & Mary Lee Persinger	10.15
S26 (N)	05-12-10.1	Consolidation Coal Co./ Murray Energy	38.48
S27 (O)	05-11-1.4	Larry W. Dunlap, et al	32.493
S28 (P)	05-11-1.1	Larry W. Dunlap & Charles Leroy, et al	34.405
S29 (T)	05-11-21	Karen Reed, et al	112.67
S30 (U)	05-12-11	Wesley B. Bryan & Wesley R. Bryan II	52.478
S31 (Z)	05-15-04	Joseph J. Kramer, et ux	41.106
S32 (BB)	05-15-03	Joseph J. Kramer, et ux	36.10
S33 (DB)	05-15-02	John David Petrock, et ux	5
S34 (FF)	05-15-14	John David Petrock, et ux	25
S35 (HH)	05-15-12	John David Petrock, et ux	150.23
S36	05-15-15	Robert L. Shields, et al	49
S37	05-14-12	Dale R. Gallaher, et al	135.100
S38	05-14-10	Wanda P. Rine (Life)	107.372
S39	05-12-15	Woodland Hills Church of God Trs.	0.375
S40	05-12-21.1	Robert W. Jr. & Wendy L. Riggenschach	14.222
S41	05-12-13	Linda Hamilton, et al	41.887
S42	05-12-7.1	Raymond K. Miller	1.609
S43	05-12-7.2	Raymond K. Miller	4.66
S44	05-12-07	Robert Wm. Riggenschach, et ux	104.231
S45 (B)	05-12-02	CNX LAND, LLC	60.68
S46	05-12-03	CNX LAND, LLC	62.30
S47	05-12-05	CNX LAND, LLC	61.883
S48	05-07-34	W VA DEPT OF HIGHWAYS	10.88
S49	05-07-31.2	WILLIAM N ROUPE ET UX	3.304
S50	05-07-31.4	GRANDVIEW-DOOLEN PSD	0.23
S51	05-07-32	WILLIAM N & VIRGINIA A ROUPE	4.2

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S52	05-07-43.4	Ida Campbell	0.29
S53	05-07-43.1	State Road Commission	1.48
S54	05-11-01	William N. & Virginia A. Roupe	4.527
S55	05-11-1.6	Debra Morris	2.093
S56	05-11-1.3	Jay A. Conner, Et Ux	4.256
S57	05-11-1.2	Jay A. Conner, Et Ux	5.824
S58	05-11-02	Walter C. & Cheryl A. Rine	42.36
S59	05-11-2.2	Joshua A. Myers	2.193
S60	05-11-2.1	Walter C. & Cheryl A. Rine	1.19
S61	05-11-17.2	Brenda & Michael Bryan	11.504
S62 (X)	05-11-16	Keith E. Haught, Et Al	83.674
S63	05-11-14.1	Dennis F. Moore, Et Ux	1.056
S64	05-11-13	Joy D. Gartman & Arlin Gatts	12.29
S65	05-11-12	Joseph J. Kramer, Et Ux	43.2188
S66 (CQ)	05-15-5	Joseph J. Kramer, Et Ux	35.0
S67 (EB)	05-15-6.1	Joseph J. Kramer, Et Ux	39.40
S68 (SQ)	05-15-13	CNX LAND, LLC	11.0
S69	05-15-10	Mark Stanley Ruckman	153.75
S70	05-7A-02	CNX LAND, LLC	2.23
S71	05-7A-01	Lucille Myers	0.529
S72	05-7B-25	Cindy D. Aliff	0.1673
S73	05-7B-26	Cindy D. Aliff	0.1148
S74	05-7B-27	Patricia A. Johnson	0.1148
S75	05-7B-28	Patricia A. Johnson	0.0574
S76	05-7B-28.1	Patricia A. Johnson	0.0574
S77	05-7B-29	Patricia A. Johnson	0.1148
S78	05-7B-30	Cindy D. Aliff, et al	0.1148
S79	05-7B-31	Cindy D. Aliff, et al	0.1148
S80	05-7B-32	Albert J. Anderson, Jr.	0.1148
S81	05-7B-33	Albert J. Anderson, Jr.	0.1182
S82	05-7B-34	Albert J. Anderson, Jr.	0.1148
S83	05-7B-35	Albert J. Anderson, Jr.	0.1217
S84	05-7B-36	Albert J. Anderson, Jr.	0.1148
S85	05-7B-37	Teresa & Thomas Gouldsberry	0.1148
S86	05-7B-38	Teresa & Thomas Gouldsberry	0.1148
S87	05-7B-39	Teresa & Thomas Gouldsberry	0.1148
S88	05-7B-40	Teresa & Thomas Gouldsberry	0.1148
S89	05-7B-41	Teresa & Thomas Gouldsberry	0.1148
S90	05-7B-42	Teresa & Thomas Gouldsberry	0.1194
S91	05-7B-43	Teresa & Thomas Gouldsberry	0.1148
S92	05-7B-44	Daniel D. & Mary E. Robinson	0.1148
S93	05-7B-45	Daniel D. & Mary E. Robinson	0.1148
S94	05-7B-46	Daniel D. Robinson, et ux	0.1148
S95	05-7B-47	Daniel D. Robinson, et ux	0.1148
S96	05-7B-01	Patricia L. Robinson	1.257
S97	05-7B-24	Cindy D. Aliff	0.0354
S98	05-7B-23	Cindy D. Aliff	0.0471
S99	05-7B-22	Patricia A. Johnson	0.0505
S100	05-7B-21	Patricia A. Johnson	0.0287
S101	05-7B-21.1	Patricia A. Johnson	0.0296
S102	05-7B-20	Patricia A. Johnson	0.0626
S103	05-7B-19	Cindy D. Aliff, et al	0.0712
S104	05-7B-18	Cindy D. Aliff, et al	0.0763
S105	05-7B-17	Albert J. Anderson, Jr.	0.0849
S106	05-7B-16	Albert J. Anderson, Jr.	0.0903
S107	05-7B-15	Albert J. Anderson, Jr.	0.0970
S108	05-7B-14	Albert J. Anderson, Jr.	0.0991
S109	05-7B-13	Albert J. Anderson, Jr.	0.1067
S110	05-7B-12	Teresa & Thomas Gouldsberry	0.1113
S111	05-7B-11	Teresa & Thomas Gouldsberry	0.1159
S112	05-7B-10	Teresa & Thomas Gouldsberry	0.1199
S113	05-7B-09	Teresa & Thomas Gouldsberry	0.1240
S114	05-7B-08	Teresa & Thomas Gouldsberry	0.1286
S115	05-7B-07	Teresa & Thomas Gouldsberry	0.1331
S116	05-7B-06	Teresa & Thomas Gouldsberry	0.1377
S117	05-7B-05	Daniel D. & Mary E. Robinson	0.1418
S118	05-7B-04	Daniel D. & Mary E. Robinson	0.1458
S119	05-7B-03	Daniel D. Robinson, et ux	0.1504
S120	05-7B-02	Daniel D. Robinson, et ux	0.1550
S121	05-12-13.1	Raymond K. Miller	0.113



P.S. 708

David L Jackson



**TUG HILL
OPERATING**

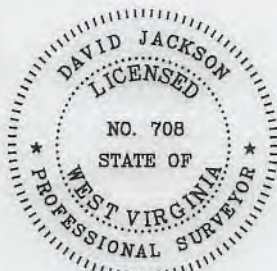
OPERATOR'S
WELL #: Woodford 10HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 6
DATE: 12/14/2018
REVISED DATE:
01/04/2019

**WOODFORD LEASE
WELL 10HU
636.4012± ACRES**

LEASE NO.	TAGS	PARCEL	OIL & GAS ROYALTY OWNER	DEED BOOK	PAGE
041112	A	5-7-43	COLUMBIAN CHEMICALS COMPANY	691	363
041112	B	5-12-2	COLUMBIAN CHEMICALS COMPANY	691	363
10*23969	C	5-12-8	MARK A. JOHNSON ET UX	1020	195
10*24588	C	5-12-8	MICHAEL POWDERLY	1025	287
10*24577	C	5-12-8	LYNN A. YATES & WALTER R. YATES		
10*23896	C	5-12-8	MOLLY MCMAHON AND JOHN D. MCMAHON	1017	489
10*18827	C	5-12-8	FRIN E SCHOLL	937	626
10*18835	C	5-12-8	REBECCA LYN N KIER AND ERIC JAMES KIER	937	405
10*18968	C	5-12-8	E SHIELA PAVLOVICH	940	291
10*18969	C	5-12-8	JEANNE MARIE VAN GROU AND RICHARD ARTHUR VAN GROU	941	289
10*19500	C	5-12-8	JAMES CONTRERAS AND CATHERINE CONTRERAS	942	608
10*19825	C	5-12-8	THOMAS A POWDERLY	945	639
10*19826	C	5-12-8	TERRANCE V POWDERLY SR	945	637
10*19827	C	5-12-8	CORINNE E VERNA AND JONATHAN C VERNA SR	945	635
10*19828	C	5-12-8	ANNE M AND JOHN LEACH	945	633
10*19829	C	5-12-8	MARGARET J WHITFORD AND LANCE W WHITFORD	945	631
10*19830	C	5-12-8	DAVID POWDERLY AND NANCY A POWDERLY	945	629
10*21002	C	5-12-8	STANLEY EUGENE STOWE	951	215
10*21045	C	5-12-8	SANDRA J HARMON AND WALTER D HARMON	951	217
10*21190	C	5-12-8	MARGARET CLUCKNER	941	283
10*21223	C	5-12-8	EUGENE C GRIEB AND SHIRLEY K GRIEB	961	468
10*21607	C	5-12-8	SHERLEY R STOWE & KAREN M STOWE	959	474
10*21924	C	5-12-8	BEVERLY A MILLER	953	533
10*21926	C	5-12-8	VIOLA JANE BREON AND JAMES RONALD BREON	953	360
10*21929	C	5-12-8	BENNY MILLER	960	177
10*21930	C	5-12-8	JAMES A GRENOBLE AND MARY JANE GRENOBLE	953	263
10*21938	C	5-12-8	SEAN M GRENOBLE AND CHERYL A GRENOBLE	960	91
10*21939	C	5-12-8	ULA F NELSON	960	96
10*22051	C	5-12-8	NOEL A PARKS	960	509
10*22309	C	5-12-8	AARON D LITMAN AND BETTY J LITMAN	963	408
10*22311	C	5-12-8	WILLIAM L LITMAN AND VICKIE L LITMAN	963	404
10*22312	C	5-12-8	RICHARD WOOD AND VICKI WOOD	962	528
10*22349	C	5-12-8	ANITA BAE MILLER	910	152
10*22408	C	5-12-8	REBECCA S TARR	962	578
10*22548	C	5-12-8	SHARON TOLER WILLIAMS & HERVY WILLIAMS	966	194
10*22604	C	5-12-8	WILLIAM LEESON	966	499
10*22605	C	5-12-8	MICHAEL R LEESON AND BRENDA R LEESON	966	496
10*22744	C	5-12-8	BRIDGET A POWDERLY	968	206
10*22858	C	5-12-8	THOMAS C DAVIS AND MARY ELLEN DAVIS	977	63
10*23004	C	5-12-8	KLOVA A MORRIS	977	382
Q083768001	C	5-12-8	SANDRA WINSLOW	831	54
Q083768002	C	5-12-8	KERMIT REED HUBBS ET UX	831	163
Q083768003	C	5-12-8	DOUGLAS G DERROW	831	165
Q083768004	C	5-12-8	FERN A PICKENPAUGH	831	167
Q083768005	C	5-12-8	JEAN GAUTHIER	832	228
Q083768006	C	5-12-8	SONDRA SUE RULONG ET VIR	832	230
Q083768007	C	5-12-8	VERA SHIRLENE WORKMAN ET VIR	832	232
Q083768008	C	5-12-8	CHARLOTTE A MERSELS ET VIR	833	14
Q083768009	C	5-12-8	PHYLLIS JEAN OSTRANDER	833	472
Q083768010	C	5-12-8	JAMES A KOLL	832	584
Q083768011	C	5-12-8	MICHAEL W DERROW	833	464
Q083768012	C	5-12-8	WILLIAM L WILLIAMS ET UX	833	574
Q083768013	C	5-12-8	KELLY KERN	863	189
Q083768014	C	5-12-8	SHIRLEY GBUR	863	191
Q083768015	C	5-12-8	NORMAN L DERROW ET UX	832	580
Q083768016	C	5-12-8	BETTY JUNE CAMPBELL ET VIR	834	632
Q083768017	C	5-12-8	LAMOYNE S BAKER	834	634
Q083768018	C	5-12-8	HONUS ADAIR STOLLAR	836	36
Q083768019	C	5-12-8	MARTHA J JAMISON ET VIR	836	38
Q083768020	C	5-12-8	SARA BRADLEY	839	206
Q083768021	C	5-12-8	MARY S FOGLESONG ET VIR	837	352
Q083768024	C	5-12-8	JIMMIE WILLIAMS ET UX	837	143
Q083768025	C	5-12-8	JUDY ANN MCCHESEY ET VIR	840	291
Q083768026	C	5-12-8	PENNY S SCHAUER ET VIR	842	7
Q083768027	C	5-12-8	TRACI L WILLIAMS	842	9
Q083768028	C	5-12-8	STEVEN S DERROW	842	24
Q083768029	C	5-12-8	MARY E VOLTZ ET VIR	841	82
Q083768030	C	5-12-8	ELLIOTT L THRASHER II ET UX	842	510
Q083768031	C	5-12-8	JACK M FOREMAN	844	131
Q083768032	C	5-12-8	DOUGLAS E MILLER	844	520
Q083768033	C	5-12-8	REVA J ICARD ET VIR	844	526
Q083768034	C	5-12-8	JULIE SPRINGWATER	850	491
Q083768035	C	5-12-8	JULIE SPRINGWATER	850	499
Q083768036	C	5-12-8	JACK M FOREMAN	850	503
Q083768037	C	5-12-8	ANITA M MASON	851	5
Q083768038	C	5-12-8	BONNIE H GRISELL ET VIR	850	646
Q083768039	C	5-12-8	MARY ELIZABETH VOLTZ ET VIR	850	648
Q083768040	C	5-12-8	SCOTT C HARRIS ET UX	851	394
Q083768041	C	5-12-8	JACK M FOREMAN	854	178
Q083768042	C	5-12-8	JACQUELYN JOHNSON ET VIR	860	523
Q083768043	C	5-12-8	ROY JOSEPH LEACH	859	487
Q083768044	C	5-12-8	LESLIE ANN BLYTHE ET VIR	860	535
Q083768045	C	5-12-8	MURIEL ANNE MILLER ET VIR	860	545
Q083768046	C	5-12-8	GREGORY S MILLER ET UX	860	517
Q083768047	C	5-12-8	REBECCA I CULLEN ET VIR	860	558
Q083768048	C	5-12-8	FRANCES E RUTLEDGE ET VIR	860	513
Q083768049	C	5-12-8	LARRY DEAN MCWHORTER ET AL	860	529
Q083768050	C	5-12-8	LEROY MILLER	860	532
Q083768051	C	5-12-8	DAVID LEE EVANS JR ET UX	864	187
Q083768052	C	5-12-8	STEVEN POND ET UX	860	574
Q083768053	C	5-12-8	IAN KIPP HAGEMANN	860	520
Q083768054	C	5-12-8	MELISSA MILLER GIBSON ET VIR	869	100
Q083768055	C	5-12-8	HEATHER D MALO ET VIR	866	336
Q083768056	C	5-12-8	RODNEY F PETERSON	866	342
Q083768057	C	5-12-8	PRISCILLA ANN MILLER HADEN	873	545
Q083768058	C	5-12-8	DANIEL D HOBBS ET UX	873	543
Q083768059	C	5-12-8	RICHARD S MULLEN ET UX	869	98
Q083768060	C	5-12-8	JAMES B CROW ET UX	869	108
Q083768061	C	5-12-8	GREGORY S CROW	869	106

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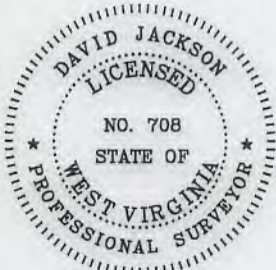
OPERATOR'S
WELL #: Woodford 10HU
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STATE: WV

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Q083768063	C	5-12-8	BRIAN K CROW	869	104
Q083768064	C	5-12-8	TIMOTHY HOWARD MANCHEGO	873	104
Q083768065	C	5-12-8	KATHLEEN HOBBS YOUNG	869	356
Q083768066	C	5-12-8	DAVID C MULLEN ET UX	869	358
Q083768067	C	5-12-8	DENNIS FISCHER ET UX	870	360
Q083768068	C	5-12-8	KATHLEEN A SULLIVAN ET VIR	870	362
Q083768069	C	5-12-8	FRANCIS F FISCHER ET UX	871	494
Q083768070	C	5-12-8	JOYCE A FIORILLI ET VIR	873	114
Q083768071	C	5-12-8	BARBARA L VOGLER ET VIR	873	112
Q083768072	C	5-12-8	HARRIET C HERMAN ET VIR	873	116
Q083768073	C	5-12-8	EUGENIA A KERR	873	118
Q083768074	C	5-12-8	JANE H BARNSTEINER ET UX	873	93
Q083768075	C	5-12-8	EDWARD P POWDERLY ET UX	873	91
Q083768076	C	5-12-8	NORA C POWDERLY	873	89
Q083768078	C	5-12-8	MARY F WELAND	873	124
Q083768079	C	5-12-8	JAMES E HERMAN	873	128
Q083768080	C	5-12-8	ANTHONY T POWDERLY ET UX	878	363
Q083768081	C	5-12-8	SHARON L SCHOLL	878	379
Q083768082	C	5-12-8	JAMES T SCHOLL	878	376
Q083768083	C	5-12-8	ANNE GALBALLY ET VIR	878	354
Q083768084	C	5-12-8	CLARK D CHASE ET UX	878	357
Q083768085	C	5-12-8	BRIDGET A POWDERLY	881	29
Q083768086	C	5-12-8	NORA K POWDERLY	881	23
Q083768087	C	5-12-8	KEVIN M POWDERLY	890	518
Q083768088	C	5-12-8	MARY S SCHOLL	890	569
Q083768089	C	5-12-8	BRIAN P POWDERLY ET UX	890	563
Q083768090	C	5-12-8	SUSANNE S QUARTERMAN	890	560
Q083768091	C	5-12-8	HARRIET C VENTURA ET VIR	894	541
Q083768099	C	5-12-8	EILEEN T POWDERLY	873	81
10*24586	D	5-7-42.1	STONE HILL MINERAL HOLDINGS, LLC		
			ANGELA B CRAWFORD AND DANA ALAN		
10*18403	E	5-7-41	CRAWFORD	932	536
10*18454	E	5-7-41	IMALLEE D LLOYD AND GARY R LLOYD	933	186
10*18455	E	5-7-41	DEBRA HARTLEY AND RICHARD HARTLEY	933	183
10*18724	E	5-7-41	TRACY M KESTERSON	938	521
10*21133	E	5-7-41	MATTHEW V AND CINDY L CONNER	951	602
Q076872007	E	5-7-41	TRACY M KESTERSON	860	579
Q090625000	F	5-7-44	CRYSTAL B DARRAH	858	252
Q076872007	G	5-7-42	TRACY M KESTERSON	860	579
10*21132	H	5-7-42.5	GREGORY E RICE AND LORI MARIE RICE	951	212
			JOE PAUL WELLMAN AND MARTHA GAYLE		
Q090236002	H	5-7-42.5	WELLMAN	842	516
Q091524001	H	5-7-42.5	DEBRA HARTLEY AND RICHARD HARTLEY	862	251
Q091524002	H	5-7-42.5	MATTHEW V CONNER AND CINDY CONNOR	862	253
Q091524003	H	5-7-42.5	TRACY M KESTERSON	860	577
Q091524004	H	5-7-42.5	ANGELA CRAWFORD AND DANA CRAWFORD	862	255
Q091524005	H	5-7-42.5	IMALLEE LLOYD AND GARY LLOYD	862	257
Q091524006	H	5-7-42.5	WILLIAM R LEVASSEUR JR	873	101
Q091524007	H	5-7-42.5	TOM KROL AND DAWN ELLEN KROL	873	98
			CHRISTINA BOARDWINE AKA TINA		
Q091524008	H	5-7-42.5	BROADWINE AND BOBBY W BOARDWINE	873	95
Q090080000	I	5-7-42.2	STEVEN LLOYD AND RHONDA LLOYD	853	314
Q087970019	J	5-7-42.3	JOSHUA DAVID HARTLEY	853	318
10*19154	K	5-12-9	ROBERT H FISH PATSY C FISH	706	631
			JASON REED HARTLEY AND JOCELYN R.		
10*24560	L	5-7-42.4	HARTLEY		
10*16914	M	5-7-39	LIONEL L AND MARY LEE PERSINGER	976	620
10*19751	N	5-12-10.1	THOMAS L ROBINSON	944	426
10*19752	N	5-12-10.1	PATRICIA ANKROM	944	447
10*19841	N	5-12-10.1	CAROLYN JEAN FERGUSON	945	641
			JAMES E ROBINSON AND CAMILLA L		
10*19842	N	5-12-10.1	ROBINSON	945	643
10*19843	N	5-12-10.1	JOHN S ROBINSON AND SHERRIE J ROBINSON	945	646
10*19975	N	5-12-10.1	CHARLES F STEWART	948	270
624169	N	5-12-10.1	FRANK, ALICE LEONA & BEN	425	232
10*47051.089.0	O	5-11-1.4	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
10*47051.089.0	P	5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
624169	Q	5-12-10	FRANK, ALICE LEONA & BEN	425	232
10*19751	Q	5-12-10	THOMAS L ROBINSON	944	426
10*19752	Q	5-12-10	PATRICIA ANKROM	944	447
10*19841	Q	5-12-10	CAROLYN JEAN FERGUSON	945	641
			JAMES E ROBINSON AND CAMILLA L		
10*19842	Q	5-12-10	ROBINSON	945	643
10*19843	Q	5-12-10	JOHN S ROBINSON AND SHERRIE J ROBINSON	945	646
10*19975	Q	5-12-10	CHARLES F STEWART	948	270
10*16918	R	5-12-12.1	LIONEL L AND MARY LEE PERSINGER	976	617
10*16908	S	5-12-12	LIONEL L AND MARY LEE PERSINGER	976	623
10*22810	T	5-11-21	CLYDE V. & KAREN S REED	864	190
10*19009	U	5-12-11	LAMOYNE BAKER	665	554
10*22065	U	5-12-11	WESLEY R BRYAN II	960	417
10*22066	U	5-12-11	WESLEY R BRYAN	960	419
10*19139	V	5-11-14	HIRAM V MOORE	699	53
			KEVIN R. CORLEY AND ANITA L. CORLEY,		
10*19126	W	5-11-17	HUSBAND AND WIFE	859	44
10*19176	W	5-11-17	MAXINE BEYSER	710	602
10*19177	W	5-11-17	NINA L KOVACS	710	594
10*19185	W	5-11-17	HARRIETT LODUTH FOLEY	710	598
10*19186	W	5-11-17	JOEL GLOVER	710	600
10*19189	W	5-11-17	SHERRY ANN MCPHERON	710	606
10*19190	W	5-11-17	SALLY LEE RIVERA	710	590
10*19191	W	5-11-17	SHARLA BETH WEAVER	710	608
10*19192	W	5-11-17	JAMES E YOHO	714	129
10*19201	W	5-11-17	DANIEL K YOHO	714	125
10*19202	W	5-11-17	DEBORAH L WOOLEY	714	131
10*19203	W	5-11-17	CAROL M YOHO	713	205
10*19204	W	5-11-17	DAYNA MARLENE YOHO	714	127
10*19205	W	5-11-17	JEFFREY C YOHO	713	203
10*19251	W	5-11-17	RAE SUZETTE BAKER	748	315
10*19252	W	5-11-17	JOHN WILSON	749	522
10*19502	W	5-11-17	SUSAN BLANCHE BEYSER	942	623
10*19899	W	5-11-17	WINIFRED G TURNER AND EDDIE G TURNER	948	277
10*21041	W	5-11-17	SHERY RITCHEA AND RANDEN D RITCHEA	949	365
10*22001	W	5-11-17	GREGORY K GLOVER	953	271
10*19139	X	5-11-16	HIRAM V MOORE	699	53
10*19178	X	5-11-16	JOSEPH HAUGHT	710	69
10*19179	X	5-11-16	KEITH HAUGHT BEVERLY HAUGHT	710	587

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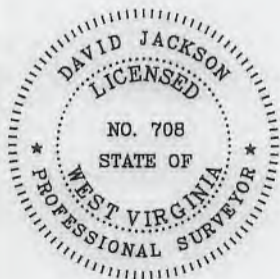
OPERATOR'S
WELL #: Woodford 10HU
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10*19180	X	5-11-16	STEVEN HAUGHT	710	67
10*14911	Y	5-11-15	FORREST MILLER	819	316
10*16913	Y	5-11-15	LIONEL L AND MARY LEE PERSINGER	976	626
10*17329	Y	5-11-15	JOHN P ICARD AND REVA J ICARD	943	524
10*18045	Y	5-11-15	KLOVA ANN MORRIS	927	114
10*18174	Y	5-11-15	THE ESTATE OF ROY JOSEPH LEACH	927	647
10*19642	Y	5-11-15	NOEL A PARKS	944	92
10*21455	Y	5-11-15	MELISSA MILLER GIBSON AND JAMES GIBSON	953	308
10*21903	Y	5-11-15	WILLIAM R VOLTZ AND SHARON VOLTZ	960	182
10*21904	Y	5-11-15	MARY S MAGERS AND WILLIAMS MAGERS	960	158
10*21905	Y	5-11-15	DAVID F VOLTZ AND LINDA VOLTZ	961	444
10*21906	Y	5-11-15	MICHAEL P VOLTZ	960	164
10*21910	Y	5-11-15	J THOMAS VOLTZ AND NANCY VOLTZ	960	179
10*21939	Y	5-11-15	ULA F NELSON	960	95
10*22134	Y	5-11-15	JACK MICHAEL FOREMAN	961	449
10*22309	Y	5-11-15	AARON D LITMAN AND BETTY J LITMAN	963	408
10*22311	Y	5-11-15	WILLIAM L LITMAN AND VICKIE L LITMAN	963	404
10*22312	Y	5-11-15	RICHARD WOOD AND VICKI WOOD	962	528
10*22438	Y	5-11-15	JULIE SPRINGWATER	964	231
10*22559	Y	5-11-15	SHARON TOLER WILLIAMS & HERVY WILLIAMS	966	94
10*19293	Z	5-15-4	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	556
10*14043	AA	5-15-1	PATRICK R. WALSH	725	566
10*14044	AA	5-15-1	JOSEPH WESLEY GALLAHER, II	724	232
10*14045	AA	5-15-1	LAMOYNE BAKER	724	236
10*14046	AA	5-15-1	CHARLES THOMPSON GALLAHER, II	724	234
10*14047	AA	5-15-1	LESLIE ANN BLYTHE	726	645
10*14048	AA	5-15-1	BRYANNA FLYNN RANKIN	727	3
10*14049	AA	5-15-1	WILDA WINTERS	726	643
10*14050	AA	5-15-1	JUDITH L. CHAMBERS	726	647
10*14051	AA	5-15-1	AMANDA L. SMITH	727	572
10*14052	AA	5-15-1	MAY ELIZABETH GALLAHER BROWNIN	727	568
10*14053	AA	5-15-1	LARRY D. MCWHORTER	727	570
10*14054	AA	5-15-1	RUDOLPH RAUKAR, JR.	730	189
10*14055	AA	5-15-1	VICTOR PEDDICORD	730	193
10*14056	AA	5-15-1	WALLACE T. BERRY	731	156
10*14057	AA	5-15-1	THE SAMUEL MILTON SHEETS TRUST	732	624
10*14058	AA	5-15-1	NANCY HOFSTATTER	732	628
10*14059	AA	5-15-1	LAURA BERRY MCGLYNN	732	622
10*14062	AA	5-15-1	REBECCA MCMILLAN	803	482
10*14063	AA	5-15-1	DAVID BURKETT	803	480
10*14064	AA	5-15-1	CIRRUS MINERALS LLC	843	452
10*47051.331.1	AA	5-15-1	LEEANN M LEMONOVICH	910	136
10*19030	BB	5-15-3	KATHLEEN R CUSTEAD	806	39
10*23911	BB	5-15-3	SUSAN W. PARSONS ET UX	1019	470
10*19038	BB	5-15-3	PHYLLIS L PARSONS	814	379
10*19046	BB	5-15-3	CAROL J WEINSTEIN	813	33
10*19047	BB	5-15-3	DEBORAH CROSTEN-PURCELL	813	28
10*19048	BB	5-15-3	JANET FRANKHAUSER WILSON	817	627
10*19055	BB	5-15-3	DONNA J GORDYAN	814	468
10*19056	BB	5-15-3	LESLIE R KEYS	814	463
10*19061	BB	5-15-3	ANN WOLLSCHLEGER	817	615
10*19066	BB	5-15-3	MICHAEL L FRANKHAUSER	818	29
10*19068	BB	5-15-3	LUNDA L RUPERT	820	229
10*19069	BB	5-15-3	SCOTT D FRANKHAUSER	822	446
10*19071	BB	5-15-3	DONNA L CLAPPER	820	191
10*19074	BB	5-15-3	PHILIP G FRANKHAUSER	822	441
10*19076	BB	5-15-3	FRANKHAUSER LIVING TRUST SUSAN LIVINGSTON, TRUSTEE REVOCABLE TRUST AGREEMENT CHARLES S HAMEL	826	495
10*19080	BB	5-15-3	HAMEL	835	266
10*19081	BB	5-15-3	RUDINA A FRANKHAUSER	831	457
10*19128	BB	5-15-3	RUDOLPH G FANKHAUSER	860	258
10*19254	BB	5-15-3	JOANNE LABRY	820	320
10*19293	BB	5-15-3	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*21934	BB	5-15-3	BERNETTA D BROWN AND DOUGLAS M BROWN	960	167
10*21936	BB	5-15-3	CHRISTOPHER L PARSONS & LAURA A PARSONS	960	170
10*22046	BB	5-15-3	PHYLLIS E HARVEY AND STEVEN E HARVEY	960	398
10*22293	BB	5-15-3	ROBERT W PARSONS AND LINDA B PARSONS	962	197
10*22404	BB	5-15-3	REBECCA S LUKATS AND ELMER M LUKATS	962	566
10*22417	BB	5-15-3	RONALD L PARSONS AND PAULA J PARSONS	963	386
10*19293	CC	5-15-5	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19309	DD	5-15-2	KAREN I DENNY	798	551
10*19310	DD	5-15-2	ELLEN DINGER & RICHARD DINGER	799	101
10*19311	DD	5-15-2	FLORENCE K FOSTER & DAVID B FOSTER	798	395
10*19312	DD	5-15-2	MARK A GALLAGHER	799	92
10*19313	DD	5-15-2	NANCY KAY GALLAGHER	798	579
10*19314	DD	5-15-2	THE JOSEPHINE A RYAN REV LIVING TRUST	798	495
10*19315	DD	5-15-2	REBECCA J KOVALCHIK AND WILLIAM D KOVALCHIK	798	597
10*19316	DD	5-15-2	CAROL A KURTZ	798	361
10*19317	DD	5-15-2	SHIRLEY J POGORZELSKI	798	588
10*19318	DD	5-15-2	PATRICIA M PORTWOOD AND CLARENCE A PORTWOOD	798	561
10*19319	DD	5-15-2	JUDY L RIDGWAY	799	110
10*19320	DD	5-15-2	ALBERTA RYAN	799	46
10*19321	DD	5-15-2	FINLEY L RYAN JR	798	624
10*19322	DD	5-15-2	JAMES D RYAN	798	504
10*19323	DD	5-15-2	JAMES R RYAN JR AND PAULA J RYAN	798	370
10*19324	DD	5-15-2	KEVIN MICHAEL RYAN	799	166
10*19325	DD	5-15-2	RUTH E RYAN	798	570
10*19326	DD	5-15-2	VINCENT JASON RYAN III	799	137
10*19327	DD	5-15-2	WILBERT W RYAN JR	798	615
10*19328	DD	5-15-2	WILLIAM HERVEY MILLER RYAN	799	128
10*19329	DD	5-15-2	GEORGE SETTLES	799	28
10*19330	DD	5-15-2	ELSIE M SHORTLAND	799	119
10*19331	DD	5-15-2	RHONDA R TOPPER & DAVID R TOPPER	799	19
10*19332	DD	5-15-2	MARY F WASZKIEWICZ	798	606
10*19333	DD	5-15-2	AUDREY E WELLS	798	386
10*19334	DD	5-15-2	KATHRYN G WOOD	800	162
10*19335	DD	5-15-2	WOODROW A. RYAN REV TRST JACK W. RYAN,	799	37
10*19337	DD	5-15-2	JACK PETROCK HATTIE PETROCK	741	68
10*19293	EE	5-15-6.1	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	655	566
10*19295	EE	5-15-6.1	KEVIN J. KELLY PAMELA MARXEN-KELLY	858	381
10*19296	EE	5-15-6.1	MARISSA C MARXEN	837	120

47-051-02152 H6A



P.S. 708

David L Jackson



**TUG HILL
OPERATING**

OPERATOR'S
WELL #: Woodford 10HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE: 5 OF 6
DATE: 12/14/2018
REVISED DATE:
01/04/2019

form wwg

**WOODFORD LEASE
WELL 10HU
636.4012± ACRES**

LEASE NO.	TAGS	PARCEL	OIL & GAS ROYALTY OWNER	DEED BOOK	PAGE
10*19297	EE	5-15-6.1	PHILIP LEONARD MARXEN	839	410
10*19298	EE	5-15-6.1	BETTY J MARXEN SLEZAK	822	351
10*19299	EE	5-15-6.1	ANNETTE CONWAY MARXEN	817	512
10*19300	EE	5-15-6.1	DEBORAH F HAGEMAN HUPPERT	815	145
10*19301	EE	5-15-6.1	SANDRA HAGEMAN KANGAS	815	150
10*19302	EE	5-15-6.1	JEFFREY C MARXEN SAMANTHA L MARXEN	817	506
10*19303	EE	5-15-6.1	THOMAS O MARXEN	814	589
10*19304	EE	5-15-6.1	DEAN L RINE, JR. PAMELA F. RINE	813	635
10*19305	EE	5-15-6.1	KAREN MARXEN SONDRON	813	605
10*19306	EE	5-15-6.1	RICHARD L. TATE MARCELINE RINE TATE	814	594
10*19307	EE	5-15-6.1	MARY SUE RINE-WALTER	815	155
10*19308	EE	5-15-6.1	WILLIAM WEBER	817	646
10*19337	FF	5-15-14	JACK PETROCK HATTIE PETROCK	741	68
10*24394	GG	5-15-13	VINCENT JASON RYAN III	1024	195
10*24392	GG	5-15-13	ALBERTA RYAN	1024	198
10*19294	GG	5-15-13	MICHAEL R. BRYAN BRENDA K. BRYAN	741	78
10*21175	GG	5-15-13	KEITH A RYAN	952	177
10*21176	GG	5-15-13	FLORENCE K FOSTER & DAVID B FOSTER	952	179
10*21177	GG	5-15-13	RHONDA R TOPPER & DAVID R TOPPER	952	181
10*21374	GG	5-15-13	SHIRLEY J POGORZELSKI	957	9
			REBECCA J KOVALCHIK AND WILLIAM D KOVALCHIK	957	17
10*21375	GG	5-15-13	JACK W RYAN AND JANET N RYAN	957	15
10*21376	GG	5-15-13	DAVID A RYAN AND CYNTHIA L RYAN	957	13
10*21377	GG	5-15-13	ROBECCA K OLDAKER AND ALVIN L OLDAKER JR	957	11
10*21378	GG	5-15-13	PATRICIA M PORTWOOD AND CLARENCE A PORTWOOD	957	19
10*21379	GG	5-15-13	JAMES R RYAN JR AND PAULA J RYAN	957	21
10*21381	GG	5-15-13	NANCY KAY GALLAGHER	957	23
10*21899	GG	5-15-13	JAMES D RYAN AND NORMA J RYAN	959	524
10*21900	GG	5-15-13	LUCINDIA A MARKLE AND KIM D MARKLE	959	520
10*21901	GG	5-15-13	YVONNE HOOVER AND JAMES A HOOVER	959	518
10*21902	GG	5-15-13	AUDREY E WELLS AND TIMOTHY R WELLS	959	522
10*22047	GG	5-15-13	KAREN I DENNY AND GARY W DENNY	960	415
10*22048	GG	5-15-13	ELSIE M SHORTLAND	960	401
10*22049	GG	5-15-13	DAVID W RYAN AND KRISTEN E RYAN	960	407
10*22050	GG	5-15-13	WILLIAM H M RYAN & DANIELA H RYAN	960	403
10*22288	GG	5-15-13	CAROL A KURTZ AND JAMES A KURTZ	960	405
10*22405	GG	5-15-13	WILLIAM WOOD	962	564
10*22406	GG	5-15-13	RUTH E RYAN	962	562
10*22514	GG	5-15-13	JUDY L RIDGWAY	964	444
10*22515	GG	5-15-13	GEORGE W SETTLES	964	442
10*22597	GG	5-15-13	MARILYN C RYAN	966	90
10*22857	GG	5-15-13	DAN M JR AND CYNTHIA J RYAN	960	403
10*19337	HH	5-15-12	JACK PETROCK HATTIE PETROCK	741	68

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P.S. 708

David L Jackson



TUG HILL
OPERATING

OPERATOR'S
WELL #: Woodford 10HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE: 6 OF 6
DATE: 12/14/2018
REVISED DATE:
01/04/2019

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

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

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

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

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
Q41112	5-7-43	A	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q075763000	5-7-43.1	B	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	NOBLE ENERGY INC	1/8+	797	642	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q088417001	RTE 2 - STATE ROAD COMMISSION	C	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	NOBLE ENERGY INC	1/8+	845	332	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/407	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q41112	RTE 2 - STATE ROAD COMMISSION	C	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q095360000	R. R. CSX TRANSPORTATION	D	CSX TRANSPORTATION INC	NOBLE ENERGY INC	1/8+	879	251	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q088417001	R. R. CSX TRANSPORTATION	D	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	NOBLE ENERGY INC	1/8+	845	332	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/407	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*24559	5-7A-32	E	DAWN THOMPSON TENANT AKA DAWN THOMPSON	TH EXPLORATION LLC	1/8+	1025	411	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q091960000	5-7A-31	F	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NOBLE ENERGY INC	1/8+	865	558	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*24534	5-7A-20	G	MICHAEL SEXTON	TH EXPLORATION LLC	1/8+	1025	413	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q091280000	5-7A-19	H	BARBARA ANDERSON	NOBLE ENERGY INC	1/8+	860	498	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091280000	5-7A-18	I	BARBARA ANDERSON	NOBLE ENERGY INC	1/8+	860	498	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q081130000	5-7A-17	J	CLARA B YOHO	NOBLE ENERGY INC	1/8+	820	514	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*24587	5-7A-24	K	RICK A KOSKY	TH EXPLORATION LLC	1/8+	1026	133	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q083451000	5-7A-23	L	HAROLD S YOUNG AND CHARLENE S YOUNG	NOBLE ENERGY INC	1/8+	828	252	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

WW-6A1 Supplement

4705102152

Operator's Well No. Woodford - 6HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
Q091091000	5-7A-22	M	RICHARD HYER AND PATRICIA HYER	NOBLE ENERGY INC	1/8+	859	500	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090307000	5-7A-21	N	DAVID A BEYSER AND SUSAN M BEYSER	NOBLE ENERGY INC	1/8+	858	260	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091091000	5-7A-29	O	RICHARD HYER AND PATRICIA HYER	NOBLE ENERGY INC	1/8+	859	500	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091091000	5-7A-28	P	RICHARD HYER AND PATRICIA HYER	NOBLE ENERGY INC	1/8+	859	500	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085232000	5-7A-27	Q	PAUL W BARRETT	NOBLE ENERGY INC	1/8+	838	469	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150001	5-7A-26	R	MICKEY L WHITE AND CAROLE WHITE	NOBLE ENERGY INC	1/8+	833	503	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150002	5-7A-26	R	ROBERT ROSS AND ORPHA L ROSS	NOBLE ENERGY INC	1/8+	833	501	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150003	5-7A-26	R	ERMA CARNEY	NOBLE ENERGY INC	1/8+	833	496	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150004	5-7A-26	R	TWILA ADAMS	NOBLE ENERGY INC	1/8+	833	486	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150005	5-7A-26	R	CONNIE CURRENT	NOBLE ENERGY INC	1/8+	834	127	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150006	5-7A-26	R	NANCY BRUMBAUGH	NOBLE ENERGY INC	1/8+	836	451	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150007	5-7A-26	R	CECIL A TRUAX AKA CECIL TRUEX	NOBLE ENERGY INC	1/8+	836	453	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

WW-6A1 Supplement

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
Q085150008	5-7A-26	R	NORA RICH WOOD	NOBLE ENERGY INC	1/8+	839	196	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150009	5-7A-26	R	JOSEPH WOOD	NOBLE ENERGY INC	1/8+	839	198	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150010	5-7A-26	R	CHARLES JAN WOOD AKA CHARLES WOOD	NOBLE ENERGY INC	1/8+	839	200	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150011	5-7A-26	R	SAM NICKI WOOD AKA SAM WOOD AND NICKI WOOD	NOBLE ENERGY INC	1/8+	839	202	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150012	5-7A-26	R	BOBBIE SUE WOOD	NOBLE ENERGY INC	1/8+	839	204	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150013	5-7A-26	R	NIKA WOOD AKA NIKA GERALD WOOD	NOBLE ENERGY INC	1/8+	839	220	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150014	5-7A-26	R	BILL LEANNE WOOD AKA BILL WOOD AND LEANNE E WOOD	NOBLE ENERGY INC	1/8+	841	360	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150015	5-7A-26	R	RONALD L NESTOR	NOBLE ENERGY INC	1/8+	842	347	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150016	5-7A-26	R	KAREN L RIDENOUR AND JAMES RIDENOUR	NOBLE ENERGY INC	1/8+	842	349	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150017	5-7A-26	R	CRYSTAL KOSKY AND RICK KOSKY	NOBLE ENERGY INC	1/8+	842	351	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150018	5-7A-26	R	TERRY GRAY	NOBLE ENERGY INC	1/8+	842	361	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q085150019	5-7A-26	R	THOMAS BETH WOOD AKA THOMAS WOOD AND REGINA WOOD	NOBLE ENERGY INC	1/8+	844	464	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment		
Q085150020	5-7A-26	R	ANNA LEE HAKR	NOBLE ENERGY INC	1/8+	859	498	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
Q085150021	5-7A-26	R	DONNA S DIMARCO AND JOHN DIMARCO	NOBLE ENERGY INC	1/8+	859	502	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
Q085150022	5-7A-26	R	CLARENCE BURGE AND ELLEN BURGE	NOBLE ENERGY INC	1/8+	860	504	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
10*24587	5-7A-25	S	RICK A KOSKY	TH EXPLORATION LLC	1/8+	1026	133	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Q091091000	5-7A-30	T	RICHARD HYER AND PATRICIA HYER	NOBLE ENERGY INC	1/8+	859	500	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
Q095360000	5-12-2.1	U	CSX TRANSPORTATION INC	NOBLE ENERGY INC	1/8+	879	251	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
041112	RTE 2 - WV DOT	V	COLUMBIAN CHEMICAL COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
Q088417001	RTE 2 - WV DOT	V	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION	NOBLE ENERGY INC	1/8+	845	332	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/407	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
624145	5-12-2	W	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
041112	5-12-3	X	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 851/220	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
041112	5-12-4	Y	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 851/220	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q095360000	5-12-4	Y	CSX TRANSPORTATION INC	NOBLE ENERGY INC	1/8+	879	251	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286	
041112	5-12-5.1	Z	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691	363	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company LLC to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 851/220	CNX Gas Company LLC to Noble Energy Inc: 909/94	Noble Energy Inc to HG Energy II Appalachia LLC: 931/43	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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4705102152 Operator's Well No. Woodford - 6HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*23004	5-12-8	DD	KLOVA A MORRIS	TH EXPLORATION LLC	1/8+	977	382	N/A	N/A	N/A	N/A	N/A	N/A
Q083768001	5-12-8	DD	SANDRA WINSLOW	NOBLE ENERGY INC	1/8+	831	54	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768002	5-12-8	DD	KERMIT REED HUBBS ET UX	NOBLE ENERGY INC	1/8+	831	163	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768003	5-12-8	DD	DOUGLAS G DERROW	NOBLE ENERGY INC	1/8+	831	165	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768004	5-12-8	DD	FERN A PICKENPAUGH	NOBLE ENERGY INC	1/8+	831	167	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768005	5-12-8	DD	JEAN GAUTHIER	NOBLE ENERGY INC	1/8+	832	228	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768006	5-12-8	DD	SONDRA SUE RULONG ET VIR	NOBLE ENERGY INC	1/8+	832	230	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768007	5-12-8	DD	VERA SHIRLENE WORKMAN ET VIR	NOBLE ENERGY INC	1/8+	832	232	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768008	5-12-8	DD	CHARLOTTE A MERSELIS ET VIR	NOBLE ENERGY INC	1/8+	833	14	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768009	5-12-8	DD	PHYLLIS JEAN OSTRANDER	NOBLE ENERGY INC	1/8+	833	472	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768010	5-12-8	DD	JAMES A KOLL	NOBLE ENERGY INC	1/8+	832	584	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768011	5-12-8	DD	MICHAEL W DERROW	NOBLE ENERGY INC	1/8+	833	464	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768012	5-12-8	DD	WILLIAM L WILLIAMS ET UX	NOBLE ENERGY INC	1/8+	833	574	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q083768013	5-12-8	DD	KELLY KERN	NOBLE ENERGY INC	1/8+	863	189	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768014	5-12-8	DD	SHIRLEY GBUR	NOBLE ENERGY INC	1/8+	863	191	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768015	5-12-8	DD	NORMAN L DERROW ET UX	NOBLE ENERGY INC	1/8+	832	580	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768016	5-12-8	DD	BETTY JUNE CAMPBELL ET VIR	NOBLE ENERGY INC	1/8+	834	632	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768017	5-12-8	DD	LAMOYNE S BAKER	NOBLE ENERGY INC	1/8+	834	634	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768018	5-12-8	DD	HONUS ADAIR STOLLAR	NOBLE ENERGY INC	1/8+	836	36	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768019	5-12-8	DD	MARTHA J JAMISON ET VIR	NOBLE ENERGY INC	1/8+	836	38	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768020	5-12-8	DD	SARA BRADLEY	NOBLE ENERGY INC	1/8+	839	206	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768021	5-12-8	DD	MARY S FOGLESONG ET VIR	NOBLE ENERGY INC	1/8+	837	352	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768024	5-12-8	DD	JIMMIE WILLIAMS ET UX	NOBLE ENERGY INC	1/8+	837	143	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768025	5-12-8	DD	JUDY ANN MCCHESEY ET VIR	NOBLE ENERGY INC	1/8+	840	291	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768026	5-12-8	DD	PENNY S SCHAUER ET VIR	NOBLE ENERGY INC	1/8+	842	7	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q083768027	5-12-8	DD	TRACI L WILLIAMS	NOBLE ENERGY INC	1/8+	842	9	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768028	5-12-8	DD	STEVEN S DERROW	NOBLE ENERGY INC	1/8+	842	24	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768029	5-12-8	DD	MARY E VOLTZ ET VIR	NOBLE ENERGY INC	1/8+	841	82	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768030	5-12-8	DD	ELLIOTT L THRASHER II ET UX	NOBLE ENERGY INC	1/8+	842	510	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768031	5-12-8	DD	JACK M FOREMAN	NOBLE ENERGY INC	1/8+	844	131	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768032	5-12-8	DD	DOUGLAS E MILLER	NOBLE ENERGY INC	1/8+	844	520	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768033	5-12-8	DD	REVA J ICARD ET VIR	NOBLE ENERGY INC	1/8+	844	526	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768034	5-12-8	DD	JULIE SPRINGWATER	NOBLE ENERGY INC	1/8+	850	491	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768035	5-12-8	DD	JULIE SPRINGWATER	NOBLE ENERGY INC	1/8+	850	499	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768036	5-12-8	DD	JACK M FOREMAN	NOBLE ENERGY INC	1/8+	850	503	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768037	5-12-8	DD	ANITA M MASON	NOBLE ENERGY INC	1/8+	851	5	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768038	5-12-8	DD	BONNIE H GRISELL ET VIR	NOBLE ENERGY INC	1/8+	850	646	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q083768039	5-12-8	DD	MARY ELIZABETH VOLTZ ET VIR	NOBLE ENERGY INC	1/8+	850	648	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768040	5-12-8	DD	SCOTT C HARRIS ET UX	NOBLE ENERGY INC	1/8+	851	394	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768041	5-12-8	DD	JACK M FOREMAN	NOBLE ENERGY INC	1/8+	854	178	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768042	5-12-8	DD	JACQUELYN JOHNSON ET VIR	NOBLE ENERGY INC	1/8+	860	523	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768043	5-12-8	DD	ROY JOSEPH LEACH	NOBLE ENERGY INC	1/8+	859	487	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768044	5-12-8	DD	LESLIE ANN BLYTHE ET VIR	NOBLE ENERGY INC	1/8+	860	535	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768045	5-12-8	DD	MURIEL ANNE MILLER ET VIR	NOBLE ENERGY INC	1/8+	860	545	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768046	5-12-8	DD	GREGORY S MILLER ET UX	NOBLE ENERGY INC	1/8+	860	517	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768047	5-12-8	DD	REBECCA L CULLEN ET VIR	NOBLE ENERGY INC	1/8+	860	558	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768048	5-12-8	DD	FRANCES E RUTLEDGE ET VIR	NOBLE ENERGY INC	1/8+	860	513	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768049	5-12-8	DD	LARRY DEAN MCWHORTER ET AL	NOBLE ENERGY INC	1/8+	860	529	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768050	5-12-8	DD	LEROY MILLER	NOBLE ENERGY INC	1/8+	860	532	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q083768051	5-12-8	DD	DAVID LEE EVANS JR ET UX	NOBLE ENERGY INC	1/8+	864	187	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768052	5-12-8	DD	STEVEN POND ET UX	NOBLE ENERGY INC	1/8+	860	574	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768053	5-12-8	DD	IAN KIPP HAGEMANN	NOBLE ENERGY INC	1/8+	860	520	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768054	5-12-8	DD	MELISSA MILLER GIBSON ET VIR	NOBLE ENERGY INC	1/8+	869	100	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768055	5-12-8	DD	HEATHER D MALO ET VIR	NOBLE ENERGY INC	1/8+	866	336	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768056	5-12-8	DD	RODNEY F PETERSON	NOBLE ENERGY INC	1/8+	866	342	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768057	5-12-8	DD	PRISCILLA ANN MILLER HADEN	NOBLE ENERGY INC	1/8+	873	545	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768058	5-12-8	DD	DANIEL D HOBBS ET UX	NOBLE ENERGY INC	1/8+	873	543	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768059	5-12-8	DD	RICHARD S MULLEN ET UX	NOBLE ENERGY INC	1/8+	869	98	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768060	5-12-8	DD	JAMES B CROW ET UX	NOBLE ENERGY INC	1/8+	869	108	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768061	5-12-8	DD	GREGORY S CROW	NOBLE ENERGY INC	1/8+	869	106	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768062	5-12-8	DD	HAROLD B CROW ET UX	NOBLE ENERGY INC	1/8+	869	102	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 988/286 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q083768063	5-12-8	DD	BRIAN K CROW	NOBLE ENERGY INC	1/8+	869	104	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768064	5-12-8	DD	TIMOTHY HOWARD MANCHEGO	NOBLE ENERGY INC	1/8+	873	104	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768065	5-12-8	DD	KATHLEEN HOBBS YOUNG	NOBLE ENERGY INC	1/8+	869	356	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768066	5-12-8	DD	DAVID C MULLEN ET UX	NOBLE ENERGY INC	1/8+	869	358	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768067	5-12-8	DD	DENNIS FISCHER ET UX	NOBLE ENERGY INC	1/8+	870	360	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768068	5-12-8	DD	KATHLEEN A SULLIVAN ET VIR	NOBLE ENERGY INC	1/8+	870	362	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768069	5-12-8	DD	FRANCIS F FISCHER ET UX	NOBLE ENERGY INC	1/8+	871	494	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768070	5-12-8	DD	JOYCE A FIORILLI ET VIR	NOBLE ENERGY INC	1/8+	873	114	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768071	5-12-8	DD	BARBARA L VOGLER ET VIR	NOBLE ENERGY INC	1/8+	873	112	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768072	5-12-8	DD	HARRIET C HERMAN ET VIR	NOBLE ENERGY INC	1/8+	873	116	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768073	5-12-8	DD	EUGENIA A KERR	NOBLE ENERGY INC	1/8+	873	118	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768074	5-12-8	DD	JANE H BARNSTEINER ET UX	NOBLE ENERGY INC	1/8+	873	93	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
Q083768075	5-12-8	DD	EDWARD P POWDERLY ET UX	NOBLE ENERGY INC	1/8+	873	91	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768076	5-12-8	DD	NORA C POWDERLY	NOBLE ENERGY INC	1/8+	873	89	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768077	5-12-8	DD	EILEEN T POWDERLY	NOBLE ENERGY INC	1/8+	873	87	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768078	5-12-8	DD	MARY F WEILAND	NOBLE ENERGY INC	1/8+	873	124	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768079	5-12-8	DD	JAMES E HERMAN	NOBLE ENERGY INC	1/8+	873	128	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768080	5-12-8	DD	ANTHONY T POWDERLY ET UX	NOBLE ENERGY INC	1/8+	878	363	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768081	5-12-8	DD	SHARON L SCHOLL	NOBLE ENERGY INC	1/8+	878	379	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768082	5-12-8	DD	JAMES T SCHOLL	NOBLE ENERGY INC	1/8+	878	376	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768083	5-12-8	DD	ANNE GALBALLY ET VIR	NOBLE ENERGY INC	1/8+	878	354	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768084	5-12-8	DD	CLARK D CHASE ET UX	NOBLE ENERGY INC	1/8+	878	357	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768085	5-12-8	DD	BRIDGET A POWDERLY	NOBLE ENERGY INC	1/8+	881	29	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768086	5-12-8	DD	NORA K POWDERLY	NOBLE ENERGY INC	1/8+	881	23	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1 Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
Q083768087	5-12-8	DD	KEVIN M POWDERLY	NOBLE ENERGY INC	1/8+	890 518	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768088	5-12-8	DD	MARY S SCHOLL	NOBLE ENERGY INC	1/8+	890 569	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768089	5-12-8	DD	BRIAN P POWDERLY ET UX	NOBLE ENERGY INC	1/8+	890 563	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768090	5-12-8	DD	SUSANNE S QUARTERMAN	NOBLE ENERGY INC	1/8+	890 560	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768091	5-12-8	DD	HARRIET C VENTURA ET VIR	NOBLE ENERGY INC	1/8+	894 541	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q083768099	5-12-8	DD	EILEEN T POWDERLY	NOBLE ENERGY INC	1/8+	873 81	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*23356	5-12-7.2	EE	RAYMOND K AND MICHELE A MILLER	TH EXPLORATION LLC	1/8+	988 484	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q092567000	5-12-7.1	FF	RAYMOND K MILLER MICHELE A MILLER	NOBLE ENERGY INC	1/8+	866 340	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q092567000	5-12-13.1	GG	RAYMOND K MILLER MICHELE A MILLER	NOBLE ENERGY INC	1/8+	866 340	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*21769	5-12-13	HH	BETTY HAMILTON	TH EXPLORATION LLC	1/8+	957 419	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21770	5-12-13	HH	SUSAN WINLAND AND PAUL MICHAEL WINLAND	TH EXPLORATION LLC	1/8+	957 421	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21776	5-12-13	HH	LINDA HAMILTON	TH EXPLORATION LLC	1/8+	957 417	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21769	5-12-14	II	BETTY HAMILTON	TH EXPLORATION LLC	1/8+	957 419	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21770	5-12-14	II	SUSAN WINLAND AND PAUL MICHAEL WINLAND	TH EXPLORATION LLC	1/8+	957 421	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21776	5-12-14	II	LINDA HAMILTON	TH EXPLORATION LLC	1/8+	957 417	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16918	5-12-12.1	JJ	LIONEL L AND MARY LEE PERSINGER	TH EXPLORATION LLC	1/8+	976 617	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*14067	5-14-13	KK	REVA FRANZE	GASTAR EXPLORATION USA INC	1/8+	666 51	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Merger - Gastar Exploration USA Inc into Gastar Exploration Inc: 21/41
10*14420	5-14-10	LL	ELLIS V. RINE AND WANDA P. RIN ET UX	GASTAR EXPLORATION USA INC	1/8+	725 141	N/A	N/A	N/A	N/A	N/A	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 735/263	Merger - Gastar Exploration USA Inc into Gastar Exploration Inc: 21/41

WW-6A1 Supplement

4705102152

Operator's Well No. Woodford - 6HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*24492	5-12-21	MM	EDWARD L. GIBSON ET UX	AMERICAN PETROLEUM PARTNERS LLC	1/8+	920	112	N/A	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/549
10*14928	5-14-12	NN	JOSEPH D PARRIOTT AND NELLIE B	TRIENERGY INC	1/8+	660	517	TriEnergy Inc to AB Resources LLC: 19/623	AB Resources to Chief Exploration & Development LLC: 666/40	TriEnergy Inc to TriEnergy Holdings LLC: 21/148	Chief, Radler 2000 Ltd Partnership & Enerplus Res. USA Corp to Chevron: 25/1	AB Resources LLC to Chevron USA Inc: 756/397	Chevron US Inc to Gastar Exploration Inc: 32/370	Gastar Exploration Inc to TH Exploration LLC: 36/9

MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

This Memorandum of Operating Agreement and Financing Statement (hereinafter referred to as "Memorandum") is executed to be effective concurrently with that certain Operating Agreement (the "Operating Agreement") by and between TH Exploration, LLC, as Operator, and HG Energy II Appalachia, LLC and TH Exploration II, LLC, as Non-Operators, covering, among other things, the development and production of crude oil, natural gas and associated substances from the leases (hereinafter called the "Contract Area") described on Exhibit "A-1" and Exhibit "A-2" attached hereto and owned by Operator and Non-Operator in the respective percentages of shares indicated on Exhibit "A" to the Operating Agreement.

The Operating Agreement contains an Accounting Procedure, along with provisions giving the parties hereto mutual liens and security interests where one or more parties hereto are or may become Debtors to one or more other parties hereto. This Memorandum incorporates by reference all of the terms and conditions of the Operating Agreement, including but not limited to the lien and security interest provisions.

The purpose of this Memorandum is to place third parties on notice of the Operating Agreement, and to secure and perfect the mutual liens and security interests of the parties hereto.

The Operating Agreement specifically provides and the parties do hereby confirm and agree that:

1. The Operator shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of, the Operating Agreement.
2. The liability of the parties under the Operating Agreement shall be several, not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for its proportionate share of costs.
3. Each Non-Operator grants to Operator a lien upon its oil and gas rights, oil and gas leases and mineral interests in the Contract Area, and a security interest in its share of oil and/or gas when extracted and its interest in all fixtures, inventory, personal property and equipment located on or used on the Contract Area and in all its contract rights and receivables related thereto and arising therefrom to secure payment of its present and future share of costs and expenses, together with interest thereon at the rate provided in the Accounting Procedure referred to above. To the extent that Operator has a security interest under the Uniform Commercial Code ("Code") of the state or states in which the Contract Area is located, Operator without prejudice and in addition to all other legal, equitable and contractual remedies which are expressly reserved, shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the rights or security interests for the payment thereof.
4. The Operator grants to Non-Operator a lien and security interest equivalent to that granted to Operator as described in Paragraph 3 above, to secure payment by Operator of its own share of costs and expenses when due.

MICHAEL MORAN
BRIGHTON RESOURCES
5851 ELLSWORTH AVENUE, #1
PITTSBURGH PA 15232-1707

51 02152

BOOK 0040 PAGE 0127

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Marshall County
Jan Pest, Clerk
Instrument 1428356
08/16/2017 @ 12:08:49 PM
ASSIGNMENTS
Book 40 @ Page 127
Pages Recorded 25
Recording Cost \$ 33.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 1 day of August, 2017 (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 the 1st day of August, 2017 (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"**, attached hereto and made a part hereof (hereinafter the "**Leases**"), less and except certain overriding royalty interests and exclusions; 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, subject to certain overriding royalty interests and less and except certain exclusions.

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 excepts and reserves from this Assignment the following:

A. 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, and

B. As to each of the Leases and all oil, gas, and associated hydrocarbons produced, saved and sold thereunder, an overriding royalty interest equal to the difference between 82% and the

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 29th day of March, 2018 (the "**Effective Date**"), by and between **HG ENERGY II APPALACHIA, LLC**, (hereinafter "**Assignor**") and **TH EXPLORATION, LLC** (hereinafter "**Assignee**") pursuant to the terms of that certain Exchange Agreement between the Assignor and the Assignee dated November 1st, 2017 (the "**Exchange Agreement**"). Capitalized terms used but not defined herein and defined in the Exchange Agreement shall have the meanings given to such terms in the Exchange 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"**, 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.

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 Leases since the time that Assignor obtained its interests in the Leases. Assignor does

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

This **ASSIGNMENT AND BILL OF SALE** (this "Assignment") dated as of August 1, 2017 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on August 2, 2017 being the day immediately following the Signing Date (the "Effective Date"), is made by **Chevron U.S.A. Inc.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") to **TH Exploration II, LLC** and **TH Exploration, LLC**, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively "Assignee") and is accepted by Assignee upon the following terms and conditions.

RECITALS

- A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor's Bryan 1H well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.
- B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor's oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignee's oil and gas leasehold interests located in Marshall County, West Virginia and Greene County, West Virginia.
- C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

1. DEFINITIONS

- 1.1 **Definitions.** As used in this Assignment, these words and expressions have the following meanings:

"Acreage Trade Agreement" means that certain Acreage Trade Agreement by and between Chevron U.S.A. Inc. and TH Exploration, LLC with an Effective Date of August 1, 2017 to be contemporaneously executed with this Assignment.

"Act" has the meaning given to such term in Section 9.1(C).

"Affiliate" means any legal entity which controls, is controlled by, or is under common control with, another legal entity. An entity is deemed to "control" another if it owns directly or indirectly at least fifty percent of either of the following: (A) the shares entitled to vote at a general election of directors of such other entity or (B) the voting interest in such other entity if such entity does not have either shares or directors.

"Applicable Law(s)" means all laws, principles of common law, regulations, statutes, codes, rules, orders, ordinances, permits, enforceable policies, licenses, certifications, decrees, constitutions, standards or other requirements with similar effect of any Government Entity and any binding interpretations of the foregoing.

"Assets" has the meaning given to such term in Section 2.1 of this Assignment.

"Assigned Hydrocarbons" means all Hydrocarbons produced and severed from, or allocable, after severance, to the Leases, Units, and Wells on and after the Effective Date.

Jan Pest
MARSHALL County 01:22:38 PM
Instrument No 1403489
Date Recorded 04/27/2016
Document Type ASN
Pages Recorded 77
Book Page 36-9
Recording Fee \$77.00
Additional \$13.00

51 02182

WHEN RECORDED RETURN TO:
TH Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
COUNTY OF MARSHALL § KNOW ALL MEN BY THESE PRESENTS:
§

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gasbar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TH Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (b) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests");

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzel, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described



51 021E2
TUG HILL

December 13, 2018

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

RE: Woodford 10HU

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Woodford 10HU well plat.

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-hillop.com.

Sincerely,

Amy L. Miller
Permitting Specialist – Appalachia Region

WW-6AC
(1/12)

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

Date of Notice Certification: 12/13/2018

API No. 47- 51 - 02152
Operator's Well No. Woodford 10HU
Well Pad Name: Woodford

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>516,097.97</u>
County: <u>Marshall</u>	UTM NAD 83 Northing: <u>4,406,054.25</u>
District: <u>Franklin</u>	Public Road Access: <u>Burch Ridge Road (County Route 26)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>CNX RCPC, LLC</u>
Watershed: <u>French Creek - Ohio River (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.

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

*PLEASE CHECK ALL THAT APPLY

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

OOG OFFICE USE ONLY

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

Required Attachments:

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

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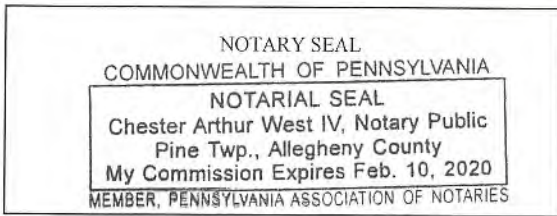
DEC 17 2018

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 13th day of December 2018
[Signature] Notary Public
 My Commission Expires 2-10-2020

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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WV Department of
Environmental Protection

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: 12/11/2018 **Date Permit Application Filed:** 12/13/2018

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

Name: CNX Land Resources, LLC Attn: Casey Saunders

Address: 1000 Consol Energy Drive

Canonsburg, PA 15318 (Well Pad)

Name: Woodland Hill Church of God c/o Margirene W. Keefe, Trustee

Address: 8669 Kossuth Amanda Road

Spencerville, OH 45887 (Access Road)

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

Name: Linda E. Hamilton (Access Road) * See attached list

Address: 651 Farmall Lane

Proctor, WV 26055 (*See attached list)

Name: _____

Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____

Address: _____

COAL OWNER OR LESSEE

Name: Murray Energy Corporation

Address: 46226 National Park Road W

St. Clairsville, OH 43950 (*See attached list)

COAL OPERATOR

Name: _____

Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: *See attached list

Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____

Address: _____

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*Please attach additional forms if necessary

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Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/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 be on 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 401 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, submit to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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WV Department of
Environmental Protection

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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Environmental Protection

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(8-13)

API NO. 47⁵¹ - 021E2
OPERATOR WELL NO. Woodford 10HU
Well Pad Name: Woodford

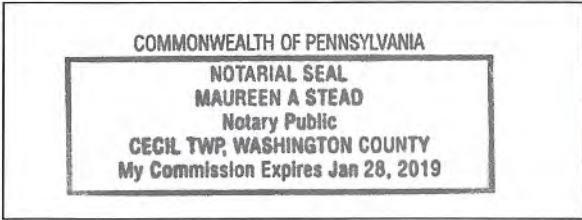
Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, 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 11 day of DEC, 2018.

Maureen A Stead Notary Public

My Commission Expires 1/28/19

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WW-6A Additional Parties to Notice Information

51 0 2 1 5 2

Well: Woodford 10HU

Surface Owners (Access Road)

Edward L. Gibson (Life) Gary E. Gibson (Remainder) 1200 Burch Ridge Road Proctor, WV 26055	/	Susan Winland and Paul M. Winland 18 Happy Trails Lane Moundsville, WV 26041	/
Betty J. Hamilton 622 Farmall Lane Proctor, WV 26055	/	Robert W. Jr. and Wendy L. Riggerbach 1048 Burch Ridge Road Proctor, WV 26055	/
Robert W. and Sharon Riggerbach 228 Farmall Lane Proctor, WV 26055	/	Raymond K. and Michele A. Miller 554 Farmall Lane Proctor, WV 26055	/
Anita Rae Miller – Life Estate 400 Filbert Avenue Moundsville, WV 26041	/	Raymond K. Miller (Remainder) 554 Farmall Lane Proctor, WV 26055	/
Gregg A. Miller (Remainder) 304 W. Brentwood Avenue Moundsville, WV 26041	/	Gerald L. Miller (Remainder) 95 Bills Lane Moundsville, WV 26041	/

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Environmental Protection

WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: WOODFORD 10HU
 District: Franklin
 County: Marshall
 State: WV

There appears to be Eighteen (18) possible water sources within 2,000 feet of the above referenced well location.

Topo Spot # 1 TM 7A Par. 26 Albert Joseph White Est. c/o Orpha Ross 304-845-4130 201 Tomlinson Ave. Moundsville, WV 26041	Topo Spot # 2 TM 7A Par. 27 Paul W. Barrett 304-312-1975 101 Washington Lands Rd. (Apt. E6) Moundsville, WV 26041	Topo Spot # 3 TM 7A Par. 21 David A. Beyser 304-845-4347 76 Rolling Acres Moundsville, WV 26041
Topo Spot # 4 TM 7A Par. 20 Betty Sexton 208-888-1776 41 Dixie Ln. Wellsburg, WV 26070	Topo Spot # 5 TM 7A Par. 19 Shelia R. Rutan 304-905-4379 411 Magnolia Ave. Moundsville, WV 26041	Topo Spot # 6 TM 7A Par. 17 Carol Martin & Harry Yoho 843-384-3277 8724 Proctor Creek Rd. Proctor, WV 26055
Topo Spot # 7 TM 7A Par. 2 CNX RCPC, LLC 724-485-4000 1000 Consol Energy Dr. Canonsburg, PA 15317	Topo Spot # 8 TM 7A Par. 1 Lucille Meyers 139 Graysville Rd. Proctor, WV 26055	Topo Spot # 9 TM 7B Par. 25 Cindy D. Aliff 304-771-1088 34 Steelton St. New Martinsville, WV 26155
Topo Spot # 10 TM 7B Par. 26 Cindy D. Aliff 304-771-1088 34 Steelton St. New Martinsville, WV 26155	Topo Spot # 11 TM 7B Par. 29 Patricia A. Johnson 304-376-1338 171 Graysville Rd. Proctor, WV 26055	Topo Spot # 12 TM 7B Par. 33 Albert J. Anderson Jr. 216-288-1266 227 Graysville Rd. Proctor, WV 26055

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Topo Spot # 13 TM 7 Par. 42.1 Holly Rice 304-843-2212 657 Long Run Rd. Proctor, WV 26055	Topo Spot # 14 TM 7 Par. 44 Crystal B. Darrah 304-280-6747 703 W. Brentwood Ave. Moundsville, WV 26041	Topo Spot # 15 TM 7 Par. 44 Crystal B. Darrah 304-280-6747 703 W. Brentwood Ave. Moundsville, WV 26041
Topo Spot # 16 TM 7 Par. 42.2 Steven & Rhonda Lloyd 304-843-0171 743 Long Run Ln. Proctor, WV 26055	Topo Spot # 17 TM 7 Par. 42.3 Joshua David Hartley 304-845-1399 759 Long Run Ln, Proctor, WV 26055	Topo Spot # 18 TM 7 Par. 42 Tracy M. Kesterson 304-830-7356 773 Long Run Ln Proctor, WV

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WV Department of
Environmental Protection

WW-6A3
(1/12)Operator Well No. Woodford 10HU

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: 6/11/2018 **Date of Planned Entry:** 6/18/2018

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: CNX Land Resources, LLC Attn: Casey Saunders
Address: 1000 Consol Energy Drive
Canonsburg, PA 15318 (Well Pad)
Name: Woodland Hill Church of God c/o Margirene W. Keefe, Trustee
Address: 8669 Kossuth Amanda Road
Spencerville, OH 45887 (Access Road)
Name: Linda E. Hamilton (Access Road)
Address: 651 Farmall Lane
Proctor, WV 26055 (*See attached list)

COAL OWNER OR LESSEE

Name: Murray Energy Corporation
Address: 46226 National Park Road W
St. Clairsville, OH 43950 (*See attached list)

MINERAL OWNER(s)

Name: HG Energy II Appalachia, LLC
Address: 5260 Dupont Road
Parkersburg, WV 26101 (*See attached list)

*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>39.80419523 ; -80.81200643</u>
County: <u>Marshall</u>	Public Road Access: <u>Burch Ridge Road - County Route 29</u>
District: <u>Franklin</u>	Watershed: <u>Fish Creek - Ohio River (HUC 10)</u>
Quadrangle: <u>Powhatan Point</u>	Generally used farm name: _____

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

Notice is hereby given by:

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

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

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Office of Oil and Gas

DEC 17 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.

WW-6A3 Additional Parties to Notice Information**Well: Woodford 10HU****Surface Owners (Access Road)**

Edward L. Gibson (Life) Gary E. Gibson (Remainder) 1200 Burch Ridge Road Proctor, WV 26055	Susan Winland and Paul M. Winland 18 Happy Trails Lane Moundsville, WV 26041
Betty J. Hamilton 622 Farmall Lane Proctor, WV 26055	Robert W. Jr. and Wendy L. Riggenschach 1048 Burch Ridge Road Proctor, WV 26055
Robert W. and Sharon Riggenschach 228 Farmall Lane Proctor, WV 26055	Raymond K. and Michele A. Miller 554 Farmall Lane Proctor, WV 26055
Anita Rae Miller – Life Estate 400 Filbert Avenue Moundsville, WV 26041	Raymond K. Miller (Remainder) 554 Farmall Lane Proctor, WV 26055
Gregg A. Miller (Remainder) 304 W. Brentwood Avenue Moundsville, WV 26041	Gerald L. Miller (Remainder) 95 Bills Lane Moundsville, WV 26041

Mineral Owners (Well Pad)

CNX Land Resources, LLC
Attn: Casey Saunders
1000 Consol Energy Drive
Canonsburg, PA 15318

Coal Owners (Well Pad)

CNX Land Resources, LLC
Attn: Casey Saunders
1000 Consol Energy Drive
Canonsburg, PA 15318

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Environmental Protection

WW-6A5
(1/12)

Operator Well No. Woodford 10HU

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: 12/13/2018

Date Permit Application Filed: 12/13/2018

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

HAND
DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

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

Name: CNX Land Resources, LLC Attn: Casey Saunders

Address: 1000 Consol Energy Drive

Canonsburg, PA 15317 (Well Pad)

Name: Woodland Hill Church of God c/o Margirene W. Keefe, Trustee

Address: 8669 Kossuth Amanda Road

Spencerville, OH (Access Road) * See Attached List

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>516,097.97</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,406,054.25</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road (County Route 29)</u>
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>CNX RCPC, LLC</u>
Watershed:	<u>French Creek - Ohio River (HUC 10)</u>		

This Notice Shall Include:

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

Well Operator: Tug Hill Operating, LLC

Telephone: 724-749-8388

Email: amiller@tug-hillop.com

Address: 380 Southpointe Boulevard, Plaza II, Suite 200

Canonsburg, PA 15317

Facsimile: 724-749-8388

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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WW-6A5 Additional Parties to Notice Information**Surface Owners (Access Road)**

Edward L. Gibson (Life) Gary E. Gibson (Remainder) 1200 Burch Ridge Road Proctor, WV 26055	/	Susan Winland and Paul M. Winland 18 Happy Trails Lane Moundsville, WV 26041	/
Betty J. Hamilton 622 Farmall Lane Proctor, WV 26055	/	Robert W. Jr. and Wendy L. Riegenbach 1048 Burch Ridge Road Proctor, WV 26055	/
Robert W. and Sharon Riegenbach 228 Farmall Lane Proctor, WV 26055	/	Raymond K. and Michele A. Miller 554 Farmall Lane Proctor, WV 26055	/
Anita Rae Miller – Life Estate 400 Filbert Avenue Moundsville, WV 26041	/	Raymond K. Miller (Remainder) 554 Farmall Lane Proctor, WV 26055	/
Gregg A. Miller (Remainder) 304 W. Brentwood Avenue Moundsville, WV 26041	/	Gerald L. Miller (Remainder) 95 Bills Lane Moundsville, WV 26041	/
Linda E. Hamilton 651 Farmall Lane Proctor, WV 26055	/		

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

June 19, 2018

Jill M. Newman
 Deputy Commissioner

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

Subject: DOH Permits for the Woodford Well Pad, Marshall County

Woodford 10HU

Dear Mr. Martin,

This well site will be accessed from Permit #06-2018-0460 issued to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 29 SLS.

The operator has signed a DISTRICT WIDE 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
 CH, OM, D-6
 File

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WV Department of
 Environmental Protection



TUG HILL

51 02182

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

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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WV Department of
Environmental Protection

Site Design, Erosion and S

Tug I

Ma

Pa

Latitude

Longitu

French Creek - Ohio

APPROVED
WVDEP OOG
8/15/2018

Exhibit A: Final D



Site Boundary

WVNS NAD 83 N: 477064.84	WVNS NAD 83 E: 316995.43
WVNS NAD 27 N: 477822.07	WVNS NAD 27 E: 316859.41
LEA NAD 83: 397883.910	LEA NAD 27: 397883.910
LEA NAD 83: 397883.910	LEA NAD 27: 397883.910
LEA NAD 27: 401318.36	LEA NAD 27: 401318.36
LEA NAD 27: 401318.36	LEA NAD 27: 401318.36
UTM 17 NAD 83 E: 446603.48	UTM 17 NAD 83 E: 316995.43

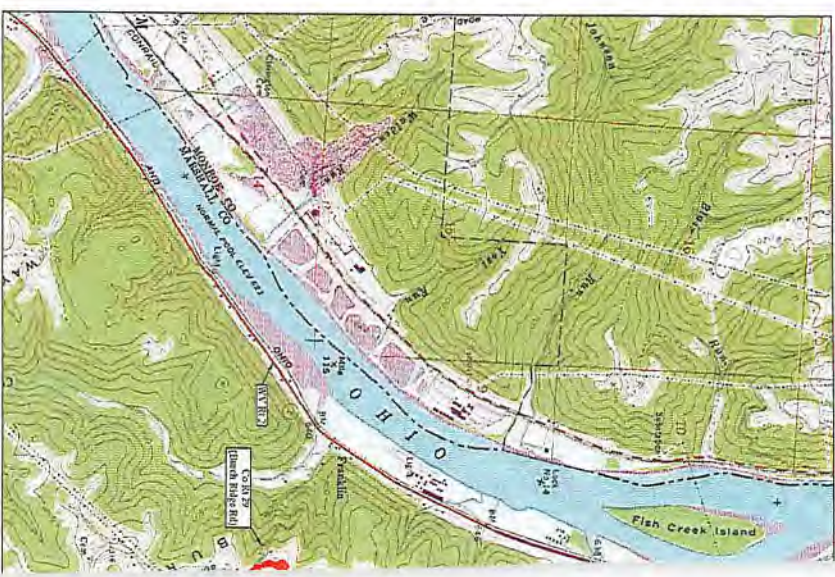
Center of WHI Pond

WVNS NAD 83 N: 477075.59	WVNS NAD 83 E: 316995.43
WVNS NAD 27 N: 477839.91	WVNS NAD 27 E: 316859.41
LEA NAD 83: 397883.910	LEA NAD 27: 397883.910
LEA NAD 83: 397883.910	LEA NAD 27: 397883.910
LEA NAD 27: 401318.36	LEA NAD 27: 401318.36
UTM 17 NAD 83 E: 446603.48	UTM 17 NAD 83 E: 316995.43

Point Elev: 1283.57'



Woodford Hill	Woodford Hill	WV R 281b	Woodford Hill	Woodford Hill	Woodford Hill
WVNS NAD 83 N: 477064.84	WVNS NAD 83 E: 316995.43	WVNS NAD 83 N: 477064.84	WVNS NAD 83 E: 316995.43	WVNS NAD 83 N: 477064.84	WVNS NAD 83 E: 316995.43
WVNS NAD 27 N: 477822.07	WVNS NAD 27 E: 316859.41	WVNS NAD 27 N: 477822.07	WVNS NAD 27 E: 316859.41	WVNS NAD 27 N: 477822.07	WVNS NAD 27 E: 316859.41
LEA NAD 83: 397883.910	LEA NAD 27: 397883.910	LEA NAD 83: 397883.910	LEA NAD 27: 397883.910	LEA NAD 83: 397883.910	LEA NAD 27: 397883.910
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UTM 17 NAD 83 E: 446603.48	UTM 17 NAD 83 E: 316995.43	UTM 17 NAD 83 E: 446603.48	UTM 17 NAD 83 E: 316995.43	UTM 17 NAD 83 E: 446603.48	UTM 17 NAD 83 E: 316995.43



Site Location (ROAD 27)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.788391	-80.813585
Center of WHI Pond	39.811882	-80.813282

USGS 7.5' C
Watershed: French

Project Contacts

Lead Hill Operators	Survey and Erodect
Brandon White - President, Andy's 724-445-2000 ext. 304490-376/Cel	Kenneth Kofe 314-843-0933 O/E
Geoff Rader - V.P. Production 617-629-5500 O/E	Mark P. Rose 304-412-6230 O/E
	Zachary Sumarivaid 304-234-0917 O/E

The Hill Operating, LLC
300 Southgate Blvd
25000
Crestonville, PA 15117

Environmental
Method Determined as required by: **Altru Ecology**
Method Name: EA 2018
Topographic Information
The topographic information shown herein is based on aerial photography by the Mountain Aerial Mapping, Boone, WV

MISS UTILITY OF WEST VIRGINIA
1-800-243-8448
Attention: AT&T, Chapter 22c, Paragraph 2
Visit our call center business data view file in the state of West Virginia.
IT'S THE LAW
Keep what's below, Call before you dig.



Alignment Routes:
From the intersection of WV Rt 2 and OH Rt 7 near New Marlinton, WV, Travel North on WV Rt 2 for 11.9 mi. Turn Right onto Co Rt 29 (Church Ridge Rd), Follow Co Rt 29 for 1.1 mi. The site entrance will be on the left (North) side of the road.

Habitat Conditions

Any wet conditions (swamp, wetland, etc.)	150
Any riparian conditions (stream, etc.)	150
Any forested areas (deciduous, coniferous, etc.)	150
Any other habitat types	150
Any other habitat types	150
Any other habitat types	150
Any other habitat types	150
Any other habitat types	150
Any other habitat types	150
Any other habitat types	150



