



west virginia department of environmental protection

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

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

Tuesday, August 6, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for MICHTER N-6HU
47-051-02206-00-00

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: MICHTER N-6HU
Farm Name: LARRY W. DUNLAP, ET AL
U.S. WELL NUMBER: 47-051-02206-00-00
Horizontal 6A New Drill
Date Issued: 8/6/2019

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.



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

July 10, 2019

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

RE: Application for Deep Well Permit – API #47-051-02206

COMPANY: Tug Hill Operating, LLC

FARM: Larry W. Dunlap, et ux Michter N-6HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

The deep well review of the application for the above company is **Approved to drill to the Trenton for Point Pleasant completion. Pooling Docket No. 282-277**

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? Yes; Chevron U.S.A., Inc., West Virginia Division of Natural Resources, and Certaineed Gypsum West Virginia, Inc. The objections from Chevron U.S.A., Inc. and West Virginia Division of Natural Resources were withdrawn prior to the hearing on July 9, 2019.
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, Docket 282-277 Exception Location Hearing
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.

** Michter N-7HU 47-051-02207; MND 6 HHS 47-051-01732; MND20AU 47-051-02011; Old Crow N-19HU 47-051-02190; Old Crow N-18HU 47-051-02123; Old Crow N-17HU 47-051-02122; Bryan N-14HU 47-051-02031; Bryan N-13HU 47-051-02030; Bryan N-12HU 47-051-02029; Woodford -10HU 47-051-02152; Woodford-9HU 47-051-02150; Woodford-8HU 47-051-02149; Woodford-7HU 47-051-02147; Woodford-6HU 47-051-02143



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

Sincerely,

A handwritten signature in blue ink that reads "Susan Rose". The signature is written in a cursive, flowing style.

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: Michter N-6HU Well Pad Name: Michter

3) Farm Name/Surface Owner: Larry W. Dunlap, et ux Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1136.00' Elevation, proposed post-construction: 1127.11'

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

(b) If Gas Shallow _____ Deep X _____
Horizontal X _____

6) Existing Pad: Yes or No No

JW
2/20/19

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 10,852' - 10,973', thickness of 121' and anticipated pressure of approx. 9,500 psi

8) Proposed Total Vertical Depth: 11,123'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 16,733'

11) Proposed Horizontal Leg Length: 5,325.52'

12) Approximate Fresh Water Strata Depths: 718'

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: 1740'

15) Approximate Coal Seam Depths: Sewickly Coal - 614' and Pittsburgh Coal - 712'

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

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

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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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	94#	810'	810'	1,327ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,602'	2,602'	1,836ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	9,820'	9,820'	3,205ft^3(CTS)
Production	5 1/2"	NEW	P110	23#	16,733'	16,733' ✓	4,000ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		10,927'	
Liners							

Ju
2/20/19

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	13,580 ✓	10,864 ✓	SEE#24	1.17/1.19
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

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2/20/19

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 13,311,275 lb proppant and 205,802 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.11 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.49 acres

23) Describe centralizer placement for each casing string:

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

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

*See Attached

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.

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 (07/02/2018) 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

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 - Michter N-6HU

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705170812	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Point Pleasant well.	State records are incomplete

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51-02266



Select County: (051) Marshall Select datatypes: (Check All)

Enter Permit #: 70812 Location Production Plugging

Owner/Completion Stratigraphy Sample

Pay/Show/Water Logs Btm Hole Loc

Get Data Reset

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

WV Geological & Economic Survey

Well: County = 51 Permit = 70812

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705170812	Marshall	70812	Franklin	Powhatan Point	Clerrington	39.819428	-80.805965	516350.3	4427400.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705170812			unknown	Pipsty Masc	C S Kirkman					unknown			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT
4705170812								unclassified	unclassified	not available	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

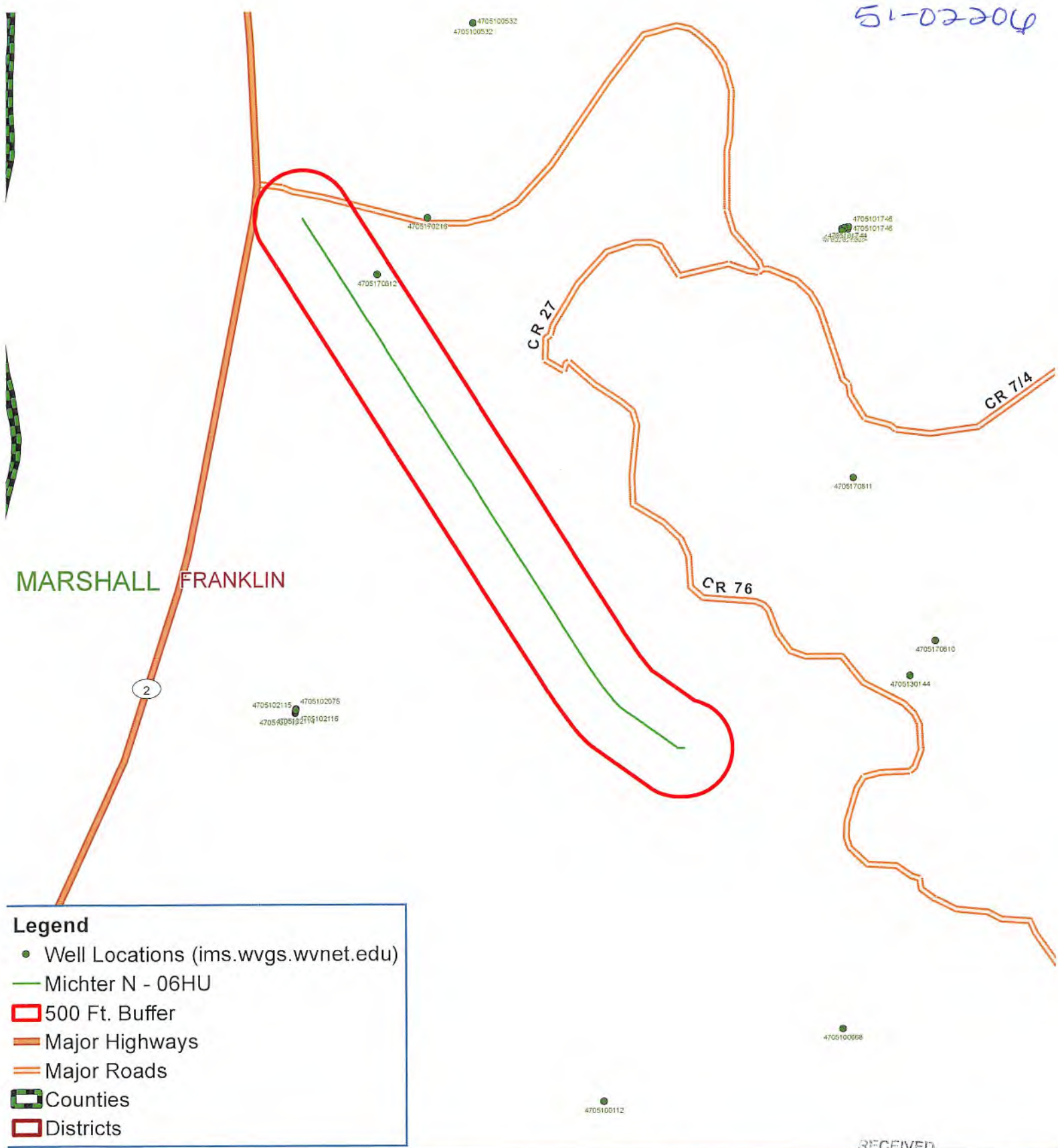
There is no Sample data for this well

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51-02204



MARSHALL FRANKLIN

2

CR 27

CR 76

CR 714

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Michter N - 06HU
- 500 Ft. Buffer
- Major Highways
- Major Roads
- Counties
- Districts

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Map Prepared by:



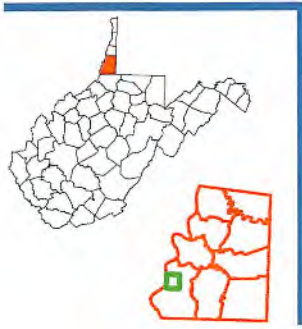
Michter N - 06HU
Franklin District
Marshall County, WV



Notes:

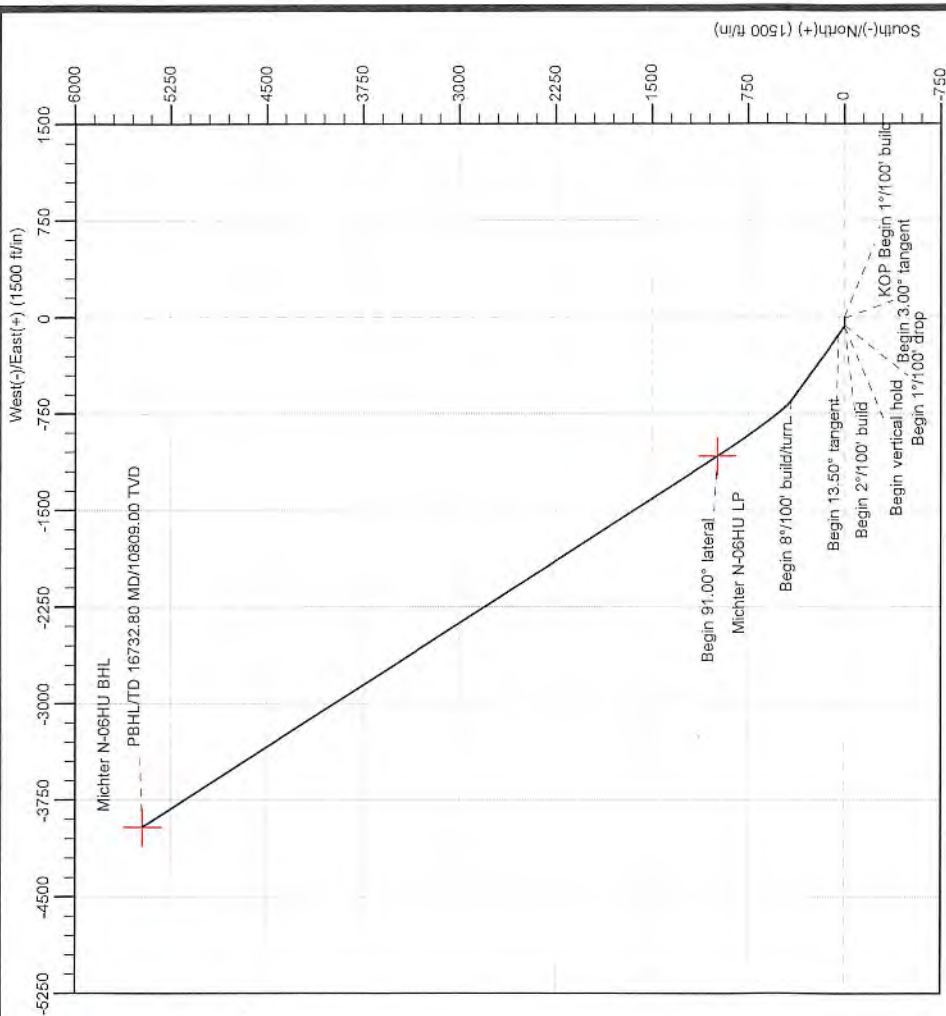
All locations are approximate and are for visualization purposes only.

Map Created: January 15, 2019





Well: Michter N-06HU (I)
Site: Michter
Project: Marshall County, West Virginia.
Design: rev1



SECTION DETAILS

Sec	MD	Irc	Azi	TVD	+N/S	+E/W	Deg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1°/100' build
3	1500.00	3.00	270.00	1499.86	0.00	0.00	1.00	270.00	0.00	Begin 3.00° tangent
4	2500.00	3.00	270.00	2498.88	0.00	-7.85	1.00	270.00	0.00	Begin 1°/100' drop
5	2800.00	0.00	270.00	2798.36	0.00	-60.19	0.00	0.00	35.29	Begin 1°/100' build
6	7001.64	0.00	270.00	7000.36	0.00	-88.04	1.00	180.00	39.90	Begin 2°/100' build
7	7676.54	13.50	305.46	7668.67	45.91	-132.49	2.00	305.46	41.88	Begin 13.50° tangent
8	10427.24	13.50	305.46	10393.39	418.58	-655.46	2.00	305.46	733.24	Begin 8°/100' build/turn
9	11408.28	91.00	327.30	10902.00	989.76	-1082.69	8.00	22.30	1435.60	Begin 91.00° lateral
10	16732.80	91.00	327.30	10805.00	5469.49	-3959.12	0.00	0.00	6752.03	PBHLTD 16732.80 MD/10809.00 TVD

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Vertical Section at 324.10° (1500 ft/in)

Michter N-06HU BHL
Michter N-06HU LP

PBHLTD 16732.80 MD/10809.00 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1960
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL @ 1130.00ft

Northing: 144455058.55
 Easting: 1697245.57
 Latitude: 39.80298702
 Longitude: -80.78765714

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.79°

Azimuths to Grid North
 True North: -0.13
 Magnetic North: -8.79

Magnetic Field
 Strength: 52086.00nT
 Dip Angle: 66.91
 Date: 5/12/2019
 Model: IGRF2015



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Michter N-06HU (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1130.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1130.00ft
Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	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	Michter				
Site Position:		Northing:	14,454,962.42 usft	Latitude:	39.80272253
From:	Lat/Long	Easting:	1,697,325.45 usft	Longitude:	-80.79737330
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.13 °

Well	Michter N-06HU (I)					
Well Position	+N/-S	0.00 ft	Northing:	14,455,058.55 usft	Latitude:	39.80298702
	+E/-W	0.00 ft	Easting:	1,697,245.51 usft	Longitude:	-80.79765714
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level:	1,130.00 ft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/12/2018	-8.66	66.91	52,088.99447002

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	324.10

Plan Survey Tool Program	Date	7/20/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	16,732.80 rev1 (Original Hole)	MWD MWD - Standard	

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Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	3.00	270.00	1,499.86	0.00	-7.85	1.00	1.00	0.00	270.00	
2,500.00	3.00	270.00	2,498.49	0.00	-60.19	0.00	0.00	0.00	0.00	
2,800.00	0.00	270.00	2,798.36	0.00	-68.04	1.00	-1.00	0.00	180.00	
7,001.64	0.00	270.00	7,000.00	0.00	-68.04	0.00	0.00	0.00	270.00	
7,676.54	13.50	305.46	7,668.67	45.91	-132.49	2.00	2.00	5.25	305.46	
10,427.24	13.50	305.46	10,343.39	418.38	-655.45	0.00	0.00	0.00	0.00	
11,408.28	91.00	327.30	10,902.00	989.76	-1,082.69	8.00	7.90	2.23	22.30	Michter N-06HU LP
16,732.80	91.00	327.30	10,809.00	5,469.49	-3,959.12	0.00	0.00	0.00	0.00	Michter N-06HU BHL

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Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1130.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1130.00ft
Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
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	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
100.00	0.00	0.00	100.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
200.00	0.00	0.00	200.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
300.00	0.00	0.00	300.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
400.00	0.00	0.00	400.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
500.00	0.00	0.00	500.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
600.00	0.00	0.00	600.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
700.00	0.00	0.00	700.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
800.00	0.00	0.00	800.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
900.00	0.00	0.00	900.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,455,058.55	1,697,245.51	39.80298702	-80.79765714	
KOP Begin 1°/100' build										
1,300.00	1.00	270.00	1,299.99	0.00	-0.87	14,455,058.55	1,697,244.64	39.80298703	-80.79766025	
1,400.00	2.00	270.00	1,399.96	0.00	-3.49	14,455,058.55	1,697,242.02	39.80298704	-80.79766957	
1,500.00	3.00	270.00	1,499.86	0.00	-7.85	14,455,058.55	1,697,237.66	39.80298707	-80.79768510	
Begin 3.00° tangent										
1,600.00	3.00	270.00	1,599.73	0.00	-13.09	14,455,058.55	1,697,232.43	39.80298710	-80.79770373	
1,700.00	3.00	270.00	1,699.59	0.00	-18.32	14,455,058.55	1,697,227.19	39.80298714	-80.79772237	
1,800.00	3.00	270.00	1,799.45	0.00	-23.55	14,455,058.55	1,697,221.96	39.80298717	-80.79774100	
1,900.00	3.00	270.00	1,899.31	0.00	-28.79	14,455,058.55	1,697,216.73	39.80298720	-80.79775964	
2,000.00	3.00	270.00	1,999.18	0.00	-34.02	14,455,058.55	1,697,211.49	39.80298723	-80.79777827	
2,100.00	3.00	270.00	2,099.04	0.00	-39.25	14,455,058.55	1,697,206.26	39.80298727	-80.79779691	
2,200.00	3.00	270.00	2,198.90	0.00	-44.49	14,455,058.55	1,697,201.02	39.80298730	-80.79781554	
2,300.00	3.00	270.00	2,298.77	0.00	-49.72	14,455,058.55	1,697,195.79	39.80298733	-80.79783417	
2,400.00	3.00	270.00	2,398.63	0.00	-54.95	14,455,058.55	1,697,190.56	39.80298736	-80.79785281	
2,500.00	3.00	270.00	2,498.49	0.00	-60.19	14,455,058.55	1,697,185.32	39.80298740	-80.79787144	
Begin 1°/100' drop										
2,600.00	2.00	270.00	2,598.40	0.00	-64.55	14,455,058.55	1,697,180.96	39.80298742	-80.79788697	
2,700.00	1.00	270.00	2,698.36	0.00	-67.17	14,455,058.55	1,697,178.34	39.80298744	-80.79789629	
2,800.00	0.00	270.00	2,798.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
Begin vertical hold										
2,900.00	0.00	0.00	2,898.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,000.00	0.00	0.00	2,998.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,100.00	0.00	0.00	3,098.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,200.00	0.00	0.00	3,198.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,300.00	0.00	0.00	3,298.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,400.00	0.00	270.00	3,398.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,500.00	0.00	0.00	3,498.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,600.00	0.00	0.00	3,598.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,700.00	0.00	0.00	3,698.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,800.00	0.00	0.00	3,798.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
3,900.00	0.00	270.00	3,898.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,000.00	0.00	0.00	3,998.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,100.00	0.00	0.00	4,098.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,200.00	0.00	0.00	4,198.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,300.00	0.00	0.00	4,298.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,400.00	0.00	0.00	4,398.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,500.00	0.00	0.00	4,498.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,600.00	0.00	270.00	4,598.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,700.00	0.00	0.00	4,698.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,800.00	0.00	0.00	4,798.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	
4,900.00	0.00	0.00	4,898.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940	

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Planning Report - Geographic

Database:	DB_Jul2216dt_V14	Local Co-ordinate Reference:	Well Michter N-06HU (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1130.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1130.00ft
Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,000.00	0.00	0.00	4,998.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,100.00	0.00	0.00	5,098.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,200.00	0.00	0.00	5,198.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,300.00	0.00	0.00	5,298.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,400.00	0.00	0.00	5,398.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,500.00	0.00	0.00	5,498.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,600.00	0.00	0.00	5,598.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,700.00	0.00	270.00	5,698.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,800.00	0.00	0.00	5,798.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
5,900.00	0.00	270.00	5,898.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,000.00	0.00	0.00	5,998.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,100.00	0.00	0.00	6,098.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,200.00	0.00	0.00	6,198.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,300.00	0.00	0.00	6,298.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,400.00	0.00	0.00	6,398.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,500.00	0.00	0.00	6,498.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,600.00	0.00	0.00	6,598.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,700.00	0.00	0.00	6,698.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,800.00	0.00	270.00	6,798.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
6,900.00	0.00	0.00	6,898.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
7,000.00	0.00	0.00	6,998.36	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
7,001.64	0.00	0.00	7,000.00	0.00	-68.04	14,455,058.55	1,697,177.47	39.80298744	-80.79789940
Begin 2"/100' build									
7,100.00	1.97	305.46	7,098.34	0.98	-69.42	14,455,059.53	1,697,176.10	39.80299014	-80.79790429
7,200.00	3.97	305.46	7,198.20	3.98	-73.63	14,455,062.53	1,697,171.88	39.80299841	-80.79791928
7,300.00	5.97	305.46	7,297.82	9.00	-80.68	14,455,067.56	1,697,164.83	39.80301225	-80.79794435
7,400.00	7.97	305.46	7,397.07	16.04	-90.56	14,455,074.59	1,697,154.95	39.80303164	-80.79797947
7,500.00	9.97	305.46	7,495.85	25.08	-103.26	14,455,083.63	1,697,142.25	39.80305655	-80.79802459
7,600.00	11.97	305.46	7,594.01	36.12	-118.75	14,455,094.67	1,697,126.76	39.80308695	-80.79807968
7,676.54	13.50	305.46	7,668.67	45.91	-132.49	14,455,104.46	1,697,113.02	39.80311391	-80.79812852
Begin 13.50° tangent									
7,700.00	13.50	305.46	7,691.48	49.08	-136.95	14,455,107.63	1,697,108.56	39.80312267	-80.79814437
7,800.00	13.50	305.46	7,788.72	62.62	-155.97	14,455,121.17	1,697,089.55	39.80315997	-80.79821196
7,900.00	13.50	305.46	7,885.96	76.16	-174.98	14,455,134.72	1,697,070.54	39.80319728	-80.79827954
8,000.00	13.50	305.46	7,983.20	89.71	-193.99	14,455,148.26	1,697,051.52	39.80323458	-80.79834713
8,100.00	13.50	305.46	8,080.43	103.25	-213.00	14,455,161.80	1,697,032.51	39.80327188	-80.79841471
8,200.00	13.50	305.46	8,177.67	116.79	-232.01	14,455,175.34	1,697,013.50	39.80330919	-80.79848229
8,300.00	13.50	305.46	8,274.91	130.33	-251.02	14,455,188.88	1,696,994.49	39.80334649	-80.79854988
8,400.00	13.50	305.46	8,372.15	143.87	-270.04	14,455,202.42	1,696,975.48	39.80338380	-80.79861746
8,500.00	13.50	305.46	8,469.38	157.41	-289.05	14,455,215.96	1,696,956.47	39.80342110	-80.79868504
8,600.00	13.50	305.46	8,566.62	170.95	-308.06	14,455,229.50	1,696,937.45	39.80345841	-80.79875263
8,700.00	13.50	305.46	8,663.86	184.49	-327.07	14,455,243.04	1,696,918.44	39.80349571	-80.79882021
8,800.00	13.50	305.46	8,761.10	198.03	-346.08	14,455,256.58	1,696,899.43	39.80353302	-80.79888780
8,900.00	13.50	305.46	8,858.34	211.57	-365.09	14,455,270.12	1,696,880.42	39.80357032	-80.79895538
9,000.00	13.50	305.46	8,955.57	225.12	-384.11	14,455,283.67	1,696,861.41	39.80360763	-80.79902296
9,100.00	13.50	305.46	9,052.81	238.66	-403.12	14,455,297.21	1,696,842.40	39.80364493	-80.79909055
9,200.00	13.50	305.46	9,150.05	252.20	-422.13	14,455,310.75	1,696,823.38	39.80368223	-80.79915813
9,300.00	13.50	305.46	9,247.29	265.74	-441.14	14,455,324.29	1,696,804.37	39.80371954	-80.79922572
9,400.00	13.50	305.46	9,344.53	279.28	-460.15	14,455,337.83	1,696,785.36	39.80375684	-80.79929330
9,500.00	13.50	305.46	9,441.76	292.82	-479.16	14,455,351.37	1,696,766.35	39.80379415	-80.79936089
9,600.00	13.50	305.46	9,539.00	306.36	-498.18	14,455,364.91	1,696,747.34	39.80383145	-80.79942847
9,700.00	13.50	305.46	9,636.24	319.90	-517.19	14,455,378.45	1,696,728.33	39.80386875	-80.79949606
9,800.00	13.50	305.46	9,733.48	333.44	-536.20	14,455,391.99	1,696,709.31	39.80390606	-80.79956364
9,900.00	13.50	305.46	9,830.71	346.98	-555.21	14,455,405.53	1,696,690.30	39.80394336	-80.79963123

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Michter N-06HU (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1130.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1130.00ft
Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,000.00	13.50	305.46	9,927.95	360.53	-574.22	14,455,419.08	1,696,671.29	39.80398067	-80.79969881	
10,100.00	13.50	305.46	10,025.19	374.07	-593.23	14,455,432.62	1,696,652.28	39.80401797	-80.79976640	
10,200.00	13.50	305.46	10,122.43	387.61	-612.25	14,455,446.16	1,696,633.27	39.80405527	-80.79983398	
10,300.00	13.50	305.46	10,219.67	401.15	-631.26	14,455,459.70	1,696,614.26	39.80409258	-80.79990157	
10,400.00	13.50	305.46	10,316.90	414.69	-650.27	14,455,473.24	1,696,595.24	39.80412988	-80.79996915	
10,427.24	13.50	305.46	10,343.39	418.38	-655.45	14,455,476.93	1,696,590.06	39.80414004	-80.79998756	
Begin 8"/100' build/turn										
10,500.00	19.01	312.25	10,413.22	431.28	-671.15	14,455,489.83	1,696,574.36	39.80417558	-80.80004337	
10,600.00	26.79	317.06	10,505.28	458.78	-698.61	14,455,517.33	1,696,546.91	39.80425126	-80.80014090	
10,700.00	34.67	319.82	10,591.17	497.07	-732.36	14,455,555.62	1,696,513.15	39.80435663	-80.80026080	
10,800.00	42.59	321.65	10,669.23	545.42	-771.77	14,455,603.97	1,696,473.74	39.80448964	-80.80040074	
10,900.00	50.53	323.01	10,737.94	602.88	-816.06	14,455,661.43	1,696,429.45	39.80464771	-80.80055798	
11,000.00	58.48	324.08	10,795.96	668.33	-864.37	14,455,726.88	1,696,381.14	39.80482775	-80.80072947	
11,100.00	66.44	324.98	10,842.16	740.50	-915.76	14,455,799.05	1,696,329.76	39.80502627	-80.80091187	
11,200.00	74.41	325.78	10,875.64	817.99	-969.22	14,455,876.53	1,696,276.29	39.80523939	-80.80110163	
11,300.00	82.37	326.52	10,895.75	899.28	-1,023.73	14,455,957.83	1,696,221.79	39.80546298	-80.80129506	
11,400.00	90.34	327.24	10,902.10	982.80	-1,078.21	14,456,041.34	1,696,167.30	39.80569267	-80.80148839	
11,408.28	91.00	327.30	10,902.00	989.76	-1,082.69	14,456,048.31	1,696,162.83	39.80571183	-80.80150428	
Begin 91.00° lateral										
11,500.00	91.00	327.30	10,900.40	1,066.93	-1,132.24	14,456,125.48	1,696,113.28	39.80592405	-80.80168010	
11,600.00	91.00	327.30	10,898.65	1,151.06	-1,186.26	14,456,209.61	1,696,059.26	39.80615543	-80.80187179	
11,700.00	91.00	327.30	10,896.91	1,235.20	-1,240.28	14,456,293.74	1,696,005.23	39.80638681	-80.80206348	
11,800.00	91.00	327.30	10,895.16	1,319.33	-1,294.30	14,456,377.88	1,695,951.21	39.80661820	-80.80225518	
11,900.00	91.00	327.30	10,893.41	1,403.46	-1,348.33	14,456,462.01	1,695,897.19	39.80684958	-80.80244688	
12,000.00	91.00	327.30	10,891.67	1,487.60	-1,402.35	14,456,546.15	1,695,843.17	39.80708096	-80.80263858	
12,100.00	91.00	327.30	10,889.92	1,571.73	-1,456.37	14,456,630.28	1,695,789.14	39.80731234	-80.80283028	
12,200.00	91.00	327.30	10,888.17	1,655.87	-1,510.39	14,456,714.41	1,695,735.12	39.80754372	-80.80302198	
12,300.00	91.00	327.30	10,886.43	1,740.00	-1,564.42	14,456,798.55	1,695,681.10	39.80777510	-80.80321368	
12,400.00	91.00	327.30	10,884.68	1,824.13	-1,618.44	14,456,882.68	1,695,627.08	39.80800648	-80.80340539	
12,500.00	91.00	327.30	10,882.93	1,908.27	-1,672.46	14,456,966.82	1,695,573.05	39.80823786	-80.80359709	
12,600.00	91.00	327.30	10,881.19	1,992.40	-1,726.48	14,457,050.95	1,695,519.03	39.80846924	-80.80378880	
12,700.00	91.00	327.30	10,879.44	2,076.54	-1,780.51	14,457,135.08	1,695,465.01	39.80870062	-80.80398051	
12,800.00	91.00	327.30	10,877.69	2,160.67	-1,834.53	14,457,219.22	1,695,410.99	39.80893200	-80.80417222	
12,900.00	91.00	327.30	10,875.95	2,244.80	-1,888.55	14,457,303.35	1,695,356.97	39.80916338	-80.80436393	
13,000.00	91.00	327.30	10,874.20	2,328.94	-1,942.57	14,457,387.48	1,695,302.94	39.80939476	-80.80455564	
13,100.00	91.00	327.30	10,872.45	2,413.07	-1,996.60	14,457,471.62	1,695,248.92	39.80962613	-80.80474735	
13,200.00	91.00	327.30	10,870.71	2,497.21	-2,050.62	14,457,555.75	1,695,194.90	39.80985751	-80.80493907	
13,300.00	91.00	327.30	10,868.96	2,581.34	-2,104.64	14,457,639.89	1,695,140.88	39.81008889	-80.80513078	
13,400.00	91.00	327.30	10,867.21	2,665.47	-2,158.66	14,457,724.02	1,695,086.85	39.81032027	-80.80532250	
13,500.00	91.00	327.30	10,865.47	2,749.61	-2,212.69	14,457,808.15	1,695,032.83	39.81055164	-80.80551422	
13,600.00	91.00	327.30	10,863.72	2,833.74	-2,266.71	14,457,892.29	1,694,978.81	39.81078302	-80.80570594	
13,700.00	91.00	327.30	10,861.97	2,917.88	-2,320.73	14,457,976.42	1,694,924.79	39.81101439	-80.80589766	
13,800.00	91.00	327.30	10,860.23	3,002.01	-2,374.75	14,458,060.55	1,694,870.76	39.81124577	-80.80608938	
13,900.00	91.00	327.30	10,858.48	3,086.14	-2,428.77	14,458,144.69	1,694,816.74	39.81147715	-80.80628110	
14,000.00	91.00	327.30	10,856.73	3,170.28	-2,482.80	14,458,228.82	1,694,762.72	39.81170852	-80.80647283	
14,100.00	91.00	327.30	10,854.99	3,254.41	-2,536.82	14,458,312.96	1,694,708.70	39.81193989	-80.80666455	
14,200.00	91.00	327.30	10,853.24	3,338.55	-2,590.84	14,458,397.09	1,694,654.68	39.81217127	-80.80685628	
14,300.00	91.00	327.30	10,851.49	3,422.68	-2,644.86	14,458,481.22	1,694,600.65	39.81240264	-80.80704801	
14,400.00	91.00	327.30	10,849.75	3,506.81	-2,698.89	14,458,565.36	1,694,546.63	39.81263402	-80.80723974	
14,500.00	91.00	327.30	10,848.00	3,590.95	-2,752.91	14,458,649.49	1,694,492.61	39.81286539	-80.80743147	
14,600.00	91.00	327.30	10,846.25	3,675.08	-2,806.93	14,458,733.63	1,694,438.59	39.81309676	-80.80762320	
14,700.00	91.00	327.30	10,844.51	3,759.22	-2,860.95	14,458,817.76	1,694,384.56	39.81332814	-80.80781494	
14,800.00	91.00	327.30	10,842.76	3,843.35	-2,914.98	14,458,901.89	1,694,330.54	39.81355951	-80.80800667	
14,900.00	91.00	327.30	10,841.01	3,927.48	-2,969.00	14,458,986.03	1,694,276.52	39.81379088	-80.80819841	

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Michter N-06HU (I)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1130.00ft
Project:	Marshall County, West Virginia.	MD Reference:	GL @ 1130.00ft
Site:	Michter	North Reference:	Grid
Well:	Michter N-06HU (I)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,000.00	91.00	327.30	10,839.27	4,011.62	-3,023.02	14,459,070.16	1,694,222.50	39.81402225	-80.80839015	
15,100.00	91.00	327.30	10,837.52	4,095.75	-3,077.04	14,459,154.29	1,694,168.47	39.81425362	-80.80858188	
15,200.00	91.00	327.30	10,835.77	4,179.89	-3,131.07	14,459,238.43	1,694,114.45	39.81448499	-80.80877362	
15,300.00	91.00	327.30	10,834.03	4,264.02	-3,185.09	14,459,322.56	1,694,060.43	39.81471637	-80.80896537	
15,400.00	91.00	327.30	10,832.28	4,348.15	-3,239.11	14,459,406.70	1,694,006.41	39.81494774	-80.80915711	
15,500.00	91.00	327.30	10,830.53	4,432.29	-3,293.13	14,459,490.83	1,693,952.39	39.81517911	-80.80934885	
15,600.00	91.00	327.30	10,828.79	4,516.42	-3,347.16	14,459,574.96	1,693,898.36	39.81541048	-80.80954060	
15,700.00	91.00	327.30	10,827.04	4,600.56	-3,401.18	14,459,659.10	1,693,844.34	39.81564185	-80.80973234	
15,800.00	91.00	327.30	10,825.29	4,684.69	-3,455.20	14,459,743.23	1,693,790.32	39.81587321	-80.80992409	
15,900.00	91.00	327.30	10,823.55	4,768.82	-3,509.22	14,459,827.37	1,693,736.30	39.81610458	-80.81011584	
16,000.00	91.00	327.30	10,821.80	4,852.96	-3,563.25	14,459,911.50	1,693,682.27	39.81633595	-80.81030759	
16,100.00	91.00	327.30	10,820.05	4,937.09	-3,617.27	14,459,995.63	1,693,628.25	39.81656732	-80.81049934	
16,200.00	91.00	327.30	10,818.31	5,021.23	-3,671.29	14,460,079.77	1,693,574.23	39.81679869	-80.81069110	
16,300.00	91.00	327.30	10,816.56	5,105.36	-3,725.31	14,460,163.90	1,693,520.21	39.81703006	-80.81088285	
16,400.00	91.00	327.30	10,814.81	5,189.49	-3,779.34	14,460,248.03	1,693,466.18	39.81726142	-80.81107461	
16,500.00	91.00	327.30	10,813.07	5,273.63	-3,833.36	14,460,332.17	1,693,412.16	39.81749279	-80.81126636	
16,600.00	91.00	327.30	10,811.32	5,357.76	-3,887.38	14,460,416.30	1,693,358.14	39.81772416	-80.81145812	
16,700.00	91.00	327.30	10,809.57	5,441.90	-3,941.40	14,460,500.44	1,693,304.12	39.81795552	-80.81164988	
16,732.80	91.00	327.30	10,809.00	5,469.49	-3,959.12	14,460,528.03	1,693,286.40	39.81803140	-80.81171277	

PBHL/TD 16732.80 MD/10809.00 TVD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Michter N-06HU BHL - hit/miss target - Shape - Point	0.00	0.00	10,809.00	5,469.49	-3,959.12	14,460,528.03	1,693,286.40	39.81803140	-80.81171277	
Michter N-06HU LP - plan hits target center - Point	0.00	0.00	10,902.00	989.76	-1,082.69	14,456,048.31	1,696,162.83	39.80571183	-80.80150428	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,200.00	1,200.00	0.00	0.00	KOP Begin 1°/100' build	
1,500.00	1,499.86	0.00	-7.85	Begin 3.00° tangent	
2,500.00	2,498.49	0.00	-60.19	Begin 1°/100' drop	
2,800.00	2,798.36	0.00	-68.04	Begin vertical hold	
7,001.64	7,000.00	0.00	-68.04	Begin 2°/100' build	
7,676.54	7,668.67	45.91	-132.49	Begin 13.50° tangent	
10,427.24	10,343.39	418.38	-655.45	Begin 8°/100' build/turn	
11,408.28	10,902.00	989.76	-1,082.69	Begin 91.00° lateral	
16,732.80	10,809.00	5,469.49	-3,959.12	PBHL/TD 16732.80 MD/10809.00 TVD	

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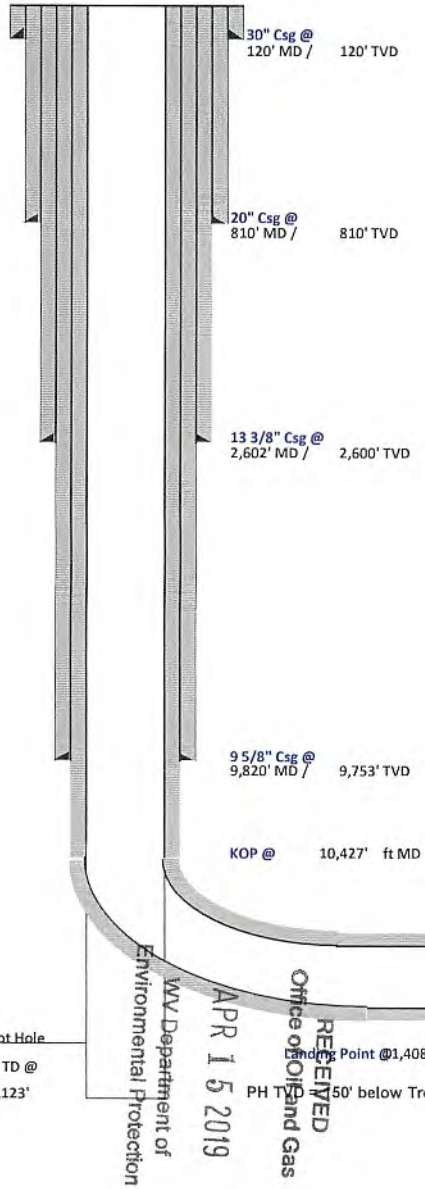


WELL NAME: Michter N-6HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Franklin
 DF Elev: 1,130' GL Elev: 1,130'
 TD: 16,733'
 TH Latitude: 39.80298702
 TH Longitude: -80.79765714
 BH Latitude: 39.8180314
 BH Longitude: -80.81171277

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	718'
Sewickley Coal	614'
Pittsburgh Coal	712'
Big Lime	1,982'
Berea	2,496'
Tully	6,154'
Marcellus	6,215'
Onondaga	6,269'
Salina	6,961'
Lockport	7,973'
Utica	10,601'
Point Pleasant	10,852'
Landing Depth	10,902'
Trenton	10,973'
Pilot Hole TD	11,123'

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	810'	810'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,602'	2,600'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	9,820'	9,753'	47	HPP110	Surface
Production	8 1/2	5 1/2	16,733'	10,809'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,430	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	1,990	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,665	A	14.5	Air	1 Centralizer every other jt
Production	3,498	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Handwritten signature and date: 2/7/19

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Lateral TD @ 16,733' ft MD
10,809' ft TVD

4705102206



Tug Hill Operating, LLC Casing and Cement Program

Michter N-6HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	810'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,602'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	9,820'	CTS
Production	5 1/2"	HCP110	8 1/2"	16,733'	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

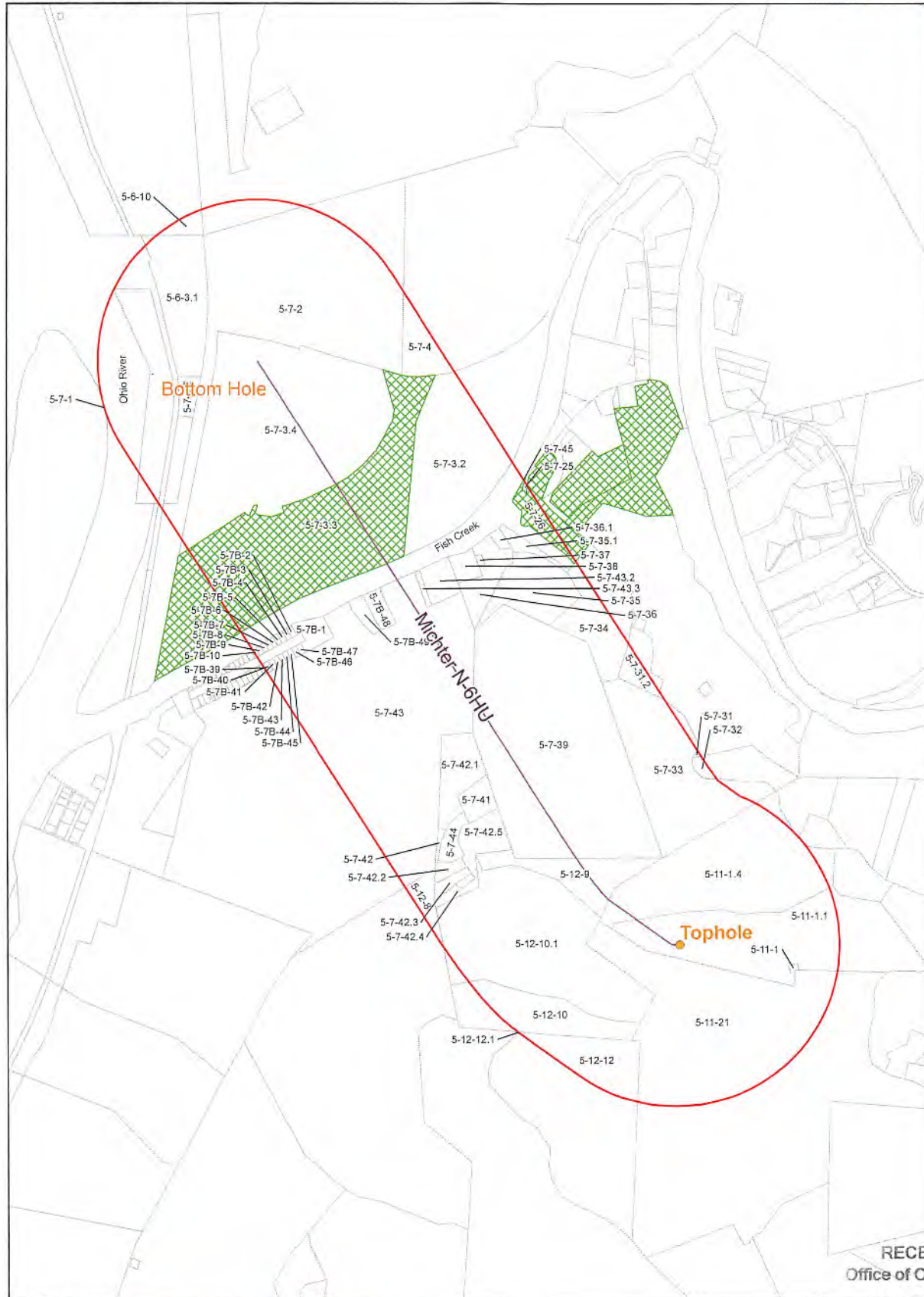
Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

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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Coordinates System: NAD 1983 UTM Zone 18N
 Projection: Transverse Mercator
 Datum: North American 1983
 Units: Meter
 Scale: 1:5000
 Date: 4/15/2019
 Author: J. D. Smith
 Title: Michter N-6HU Well Field

CONFIDENTIAL



1500 Foot Buffer
 Utica Well
 Michter N-6HU
 Operators within 1500 Feet of Well Borehole



APR 15 2019
 WV Department of
 Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Michter N-6HU

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle New Martinsville 7.5'

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

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Company Official Signature Jim Pancake
Company Official (Typed Name) Jim Pancake
Company Official Title VP Geosciences

APR 15 2019
WV Department of
Environmental Protection

Subscribed and sworn before me this 5 day of FEBRUARY, 20 19

Maureen A Stead

Notary Public

My commission expires 1/28/23

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

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 21.11 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Michter*

Comments: _____

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Title: Oil and Gas Inspector

Date: 2/7/19

APR 15 2019

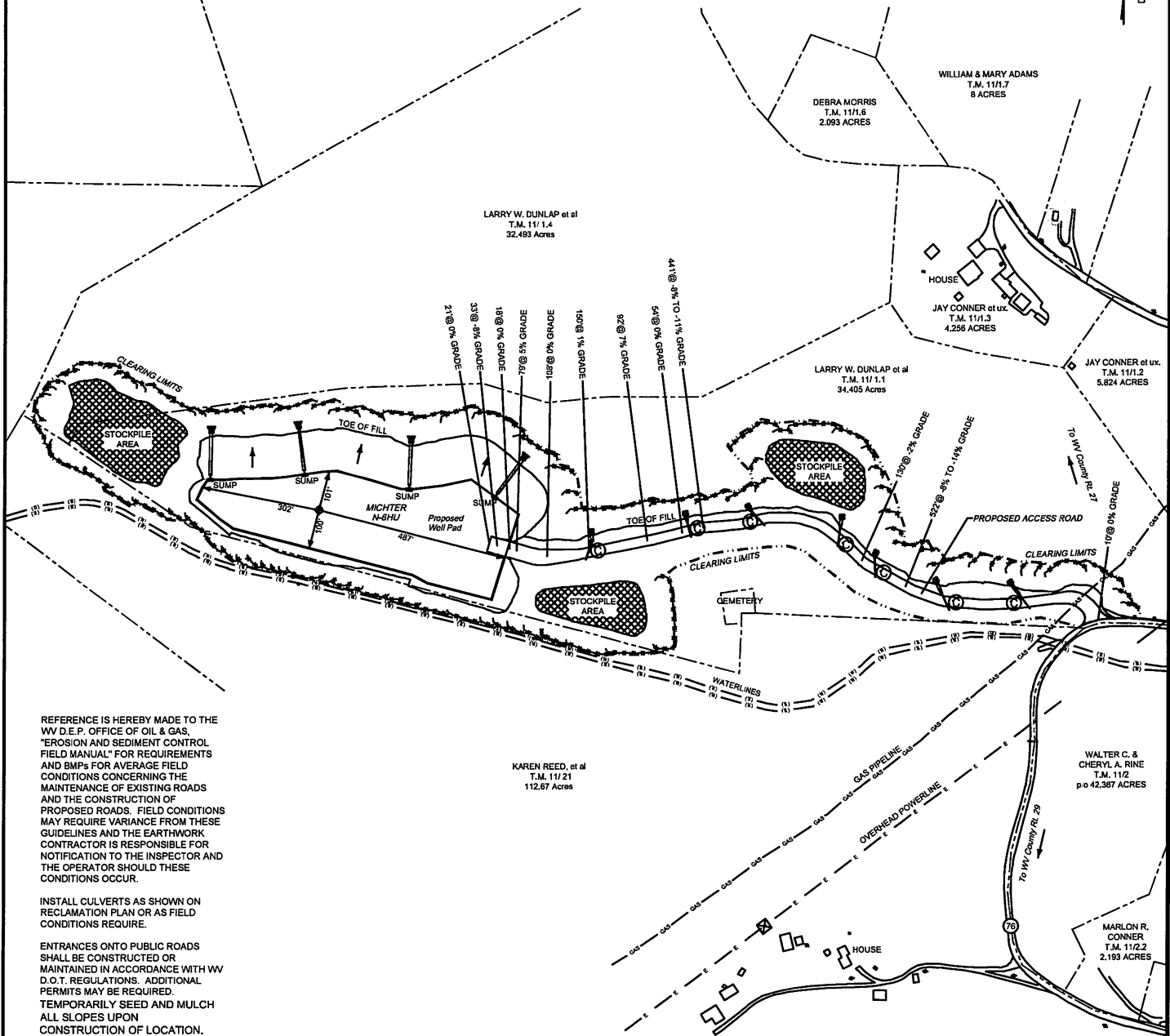
Field Reviewed? () Yes () No

WW-9

PROPOSED MICHTER N-6HU

SUPPLEMENT PG 1

DRAWING NOT TO SCALE



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.

LEGEND

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

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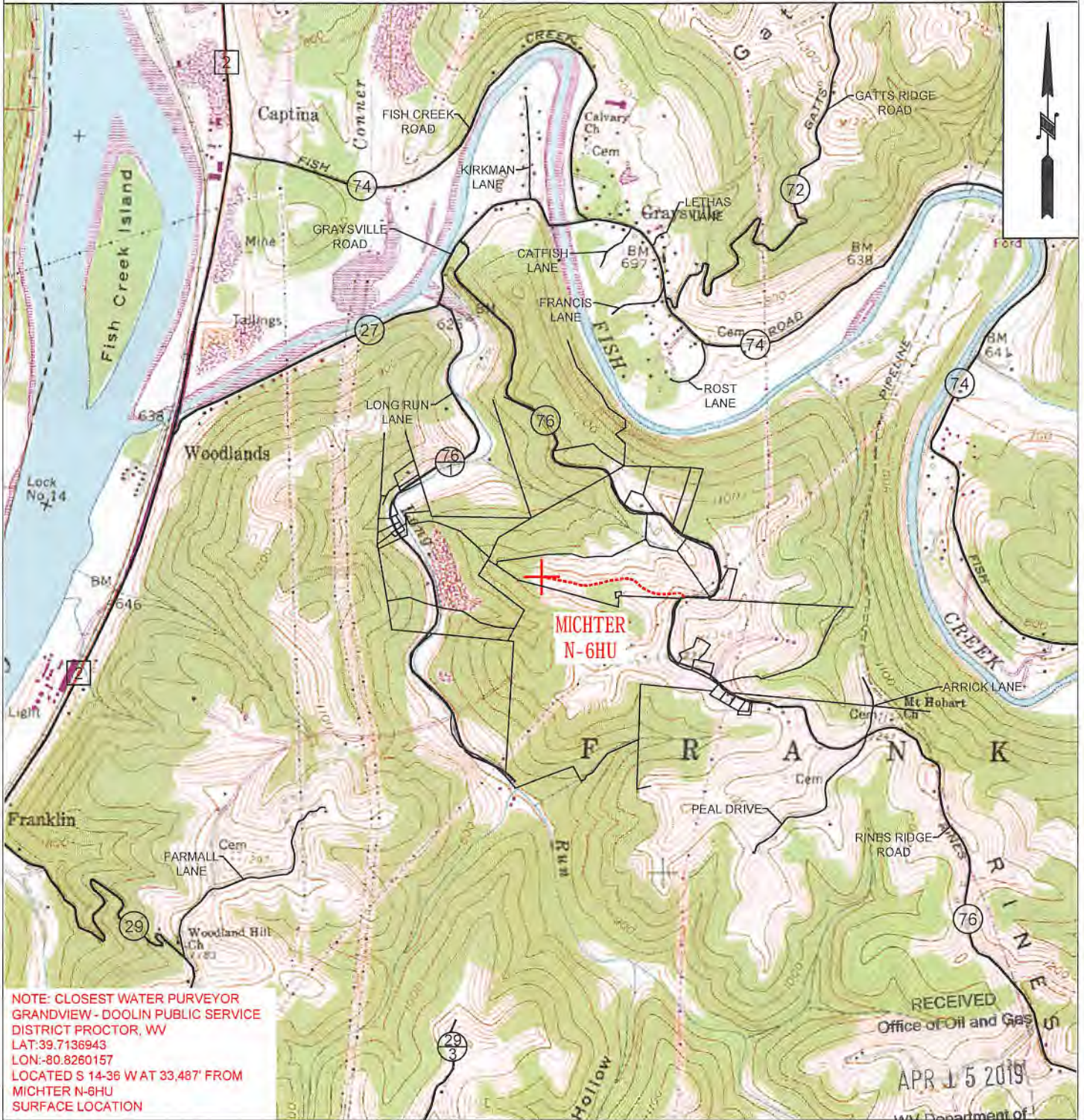
WV Department of
Environmental Protection

51-02206


WW-9

PROPOSED MICHTER N-6HU

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT: 39.7136943
LON: -80.8260157
LOCATED S 14-36 W AT 33,487' FROM
MICHTER N-6HU
SURFACE LOCATION

 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'	MICHTER
			SCALE:	DATE:
			1" = 2000'	DATE: 2-4-2019

form ww6

(BH) 5,683'

(TH) 1,734'

MICHTER LEASE WELL N-6HU 224.1945± ACRES

TOP HOLE LATITUDE: 39°50'00"
BOTTOM HOLE LATITUDE: 39°50'00"

REFERENCES

SCALE 1"=200'

30" POPLAR

18" SUGAR MAPLE

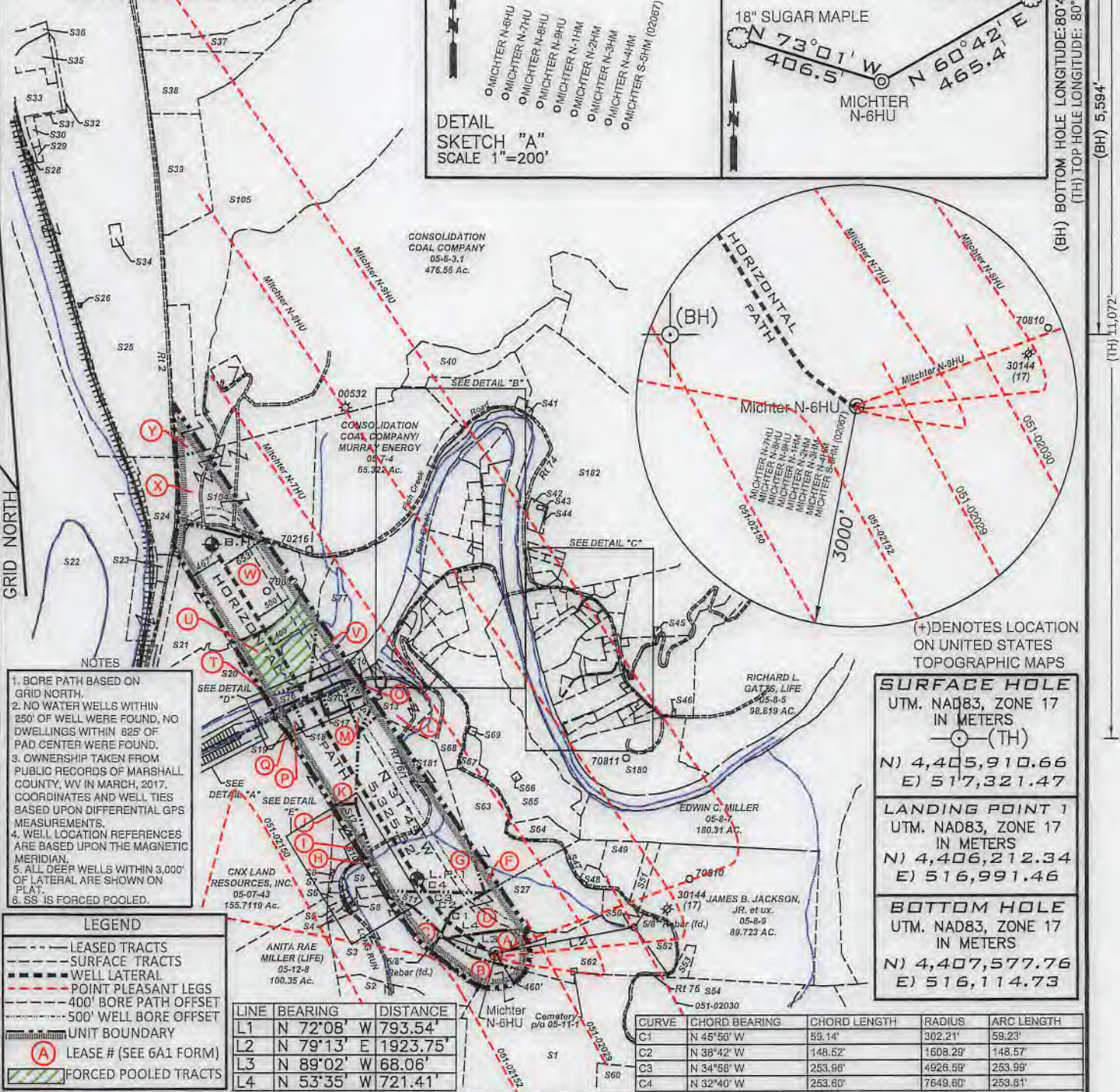
N 73°01' W 406.5'

N 60°42' E 465.4'

MICHTER N-6HU

DETAIL SKETCH "A"
SCALE 1"=200'

- MICHTER N-6HU
- MICHTER N-7HU
- MICHTER N-8HU
- MICHTER N-9HU
- MICHTER N-10HM
- MICHTER N-11HM
- MICHTER N-12HM
- MICHTER N-13HM
- MICHTER N-14HM
- MICHTER S-15HM (02067)



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

LEGEND

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

LINE	BEARING	DISTANCE
L1	N 72°08' W	793.54'
L2	N 79°13' E	1923.75'
L3	N 89°02' W	68.06'
L4	N 53°35' W	721.41'

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
--- (TH)

N) 4,405,910.66
E) 517,321.47

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS

N) 4,406,212.34
E) 516,991.46

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS

N) 4,407,577.76
E) 516,114.73

FILE NUMBER _____

DRAWING NUMBER MICHTER_N-6HU_REV1

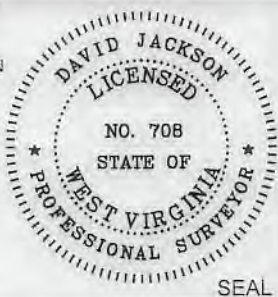
SCALE 1" = 2000'

MINIMUM DEGREE OF ACCURACY 1/200

PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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



JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-5851

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

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___

DATE: MAY 7, 2019

OPERATORS WELL NO. MICHTER N-6HU

API WELL NO. 47-051-02206 HGA

STATE WV COUNTY MARSHALL PERMIT

LOCATION ELEVATION 1127.11' WATERSHED (HUC 10) FISH CREEK

DISTRICT FRANKLIN COUNTY MARSHALL

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

SURFACE OWNER LARRY W. DUNLAP, ET AL ACREAGE 34.405

OIL & GAS ROYALTY OWNER LARRY W. DUNLAP, ET AL LEASE ACREAGE 555.9436

PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,123' TMD: 16,733'

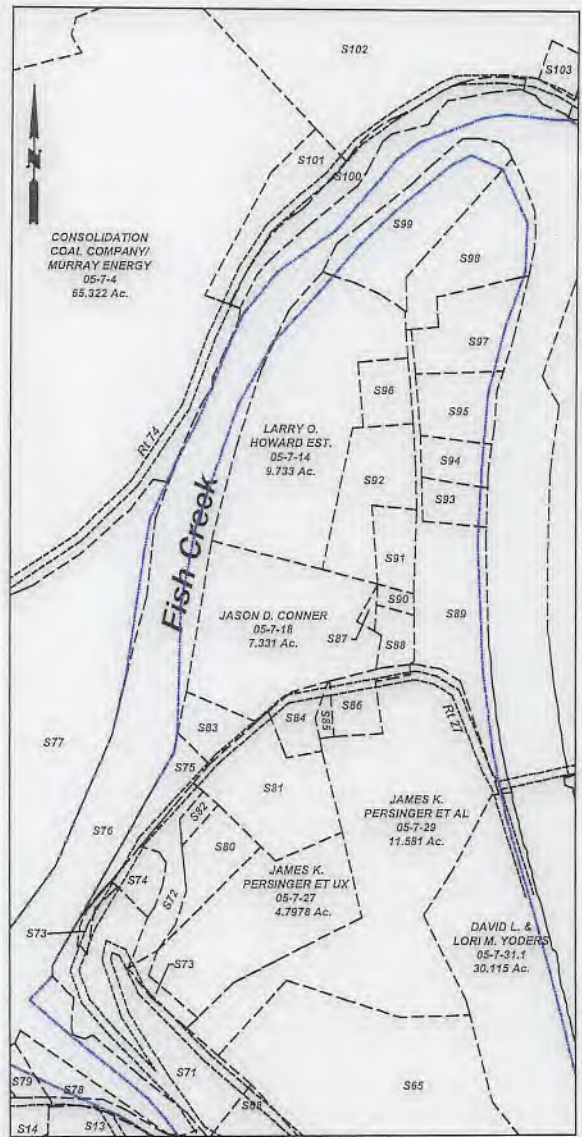
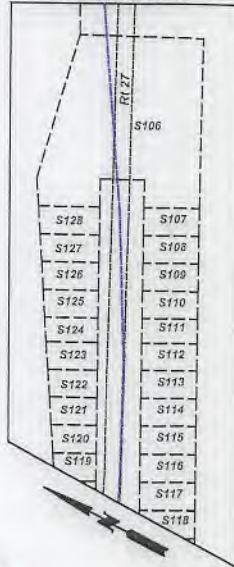
WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM

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

COUNTY NAME PERMIT

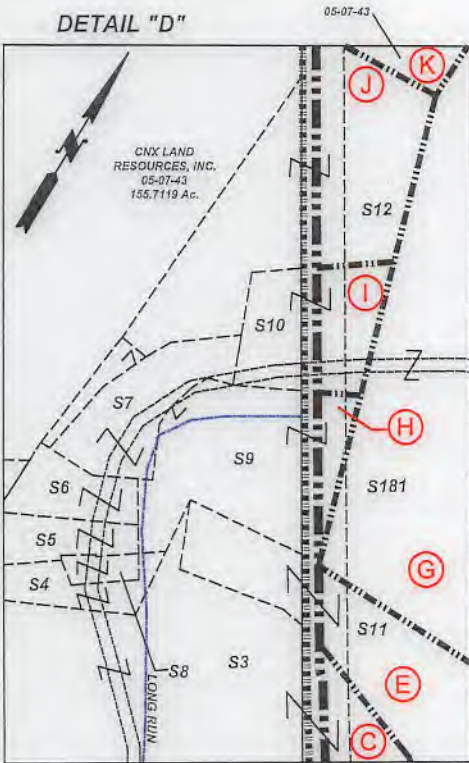
PG 2 OF 5 MICTHER LEASE
WELL N-6HU
224.1945± ACRES

DETAIL "A"

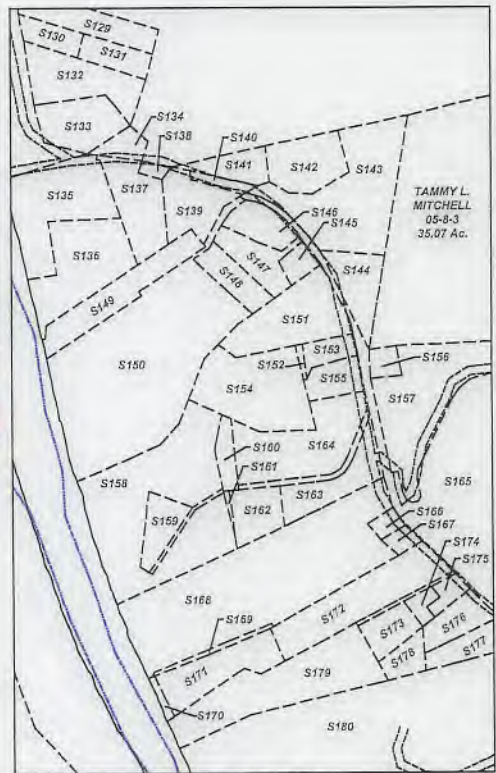
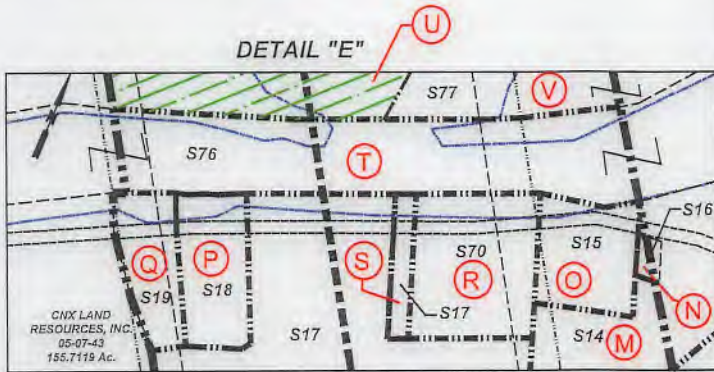


DETAIL "B"

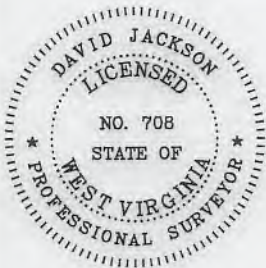
DETAIL "D"



DETAIL "E"



DETAIL "C"



P.S.
708

David L Jackson

47-051-02206 H16A



TUG HILL
OPERATING

OPERATOR'S
WELL #: Michter N-6HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 5
DATE: 05/07/2019

PG 3 OF 5 **MICHTER LEASE**
WELL N-6HU
224.1945± ACRES

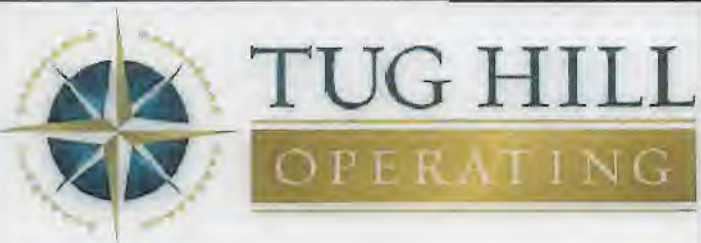
Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1 B	05-11-21	Karen Reed, et al	112.67
S2	05-12-10	Consolidation Coal Company/ Murray Energy c/o Land Dept	13.76
S3 C	05-12-10.1	Consolidation Coal Company/ Murray Energy	38.48
S4	05-07-42.4	Lionel & Mary Lee Persinger	0.94
S5	05-07-42.3	Joshua David Hartley	0.886
S6	05-07-42.2	Steven & Rhonda Lloyd	0.85
S7	05-07-44	Crystal B. Darrah	1.726
S8	05-07-42	Tracy M. Kesterson	0.54
S9 H	05-07-42.5	Matthew V. Conner, et al	3.791
S10 I	05-07-41	James A. Wade	1.00
S11 E	05-12-09	Lionel & Mary Lee Persinger	10.15
S12 J	05-07-42.1	Lionel L. & Mary Lee Persinger	5.99
S13 L	05-07-35	Samuel L. Persinger	10.708
S14 M	05-07-36	John Persinger	4.329
S15 O	05-07-38	John K. Persinger, et ux	2.65
S16 N	05-07-37	John K. Persinger, et ux	0.133
S17 S	05-07-43.3	M. Frank Mason	0.327
S18 P	05-7B-48	Cassidy Rain Carpenter	1.325
S19 Q	05-7B-49	Cassidy Rain Carpenter	1.1441
S20 U	05-07-3.3	WV Economic Development Authority	65.2077
S21 W	05-07-3.4	WV Economic Development Authority	56.3496
S22	05-07-01	U.S. of America	50.0
S23	05-07-3.5	Wheeling Power Company	1.5004
S24	05-06-3.1	Ohio Power Company	28.9966
S25	05-06-10	Ohio Power Company	241.858
S26	05-06-16	Appalachian Power CP	0.61
S27 D	05-11-1.4	Larry Dunlap, et al	32.493
S28	05-06-18	CII Carbon, LLC	0.2754
S29	05-06-12	CII Carbon, LLC	0.43458
S30	05-06-09	CII Carbon, LLC	1.15
S31	05-06-13	CII Carbon, LLC	0.318
S32	05-06-14	CII Carbon, LLC	1.408
S33	05-06-7	CII Carbon, LLC	12.454
S34	05-06-11	Consolidation Coal Company/ Murray Energy	1.05
S35	05-06-08	CII Carbon, LLC	2.727
S36	05-06-15	CII Carbon, LLC	2.522
S37	05-06-01	Consolidation Coal Company/ Murray Energy	7.99
S38	05-06-06	Consolidation Coal Company/ Murray Energy	18.50
S39	05-06-05	Consolidation Coal Company/ Murray Energy	17.159
S40	05-06-04	Consolidation Coal Company/ Murray Energy	5.47
S41	05-07-09	Norman Thomas Jackson et al	0.25
S42	05-8A-02	Graysville Cemetery Association	1.76
S43	05-8A-01	Calvary M.E. Church	2.0
S44	05-8A-03	Calvary M.E. Church	0.259
S45	05-08-23	Robert L. Shields & Donald L. Shields	0.3
S46 P/O	05-08-4	Cemetery	0.305
S47	05-11-01	William N. & Virginia A. Roupe	4.527
S48	05-11-1.6	Debra Morris	2.093
S49	05-11-1.7	William S. & Mary K. Adams	8.00
S50	05-11-1.3	Jay A. Conner, et ux	4.256
S51	05-11-1.5	Paul & Sandy Witt	3.507
S52	05-11-1.2	Jay A. Conner, et ux	5.824
S53	05-08-9.1	Scott E. Jackson, Tammy S. Souln & Marlon Jackson	1.957
S54	05-11-02	Walter C. & Cheryl A. Rine	42.36
S55	05-11-2.2	Joshua Myers	2.193
S56	05-11-2.1	Walter C. & Cheryl A. Rine	1.19
S57	05-11-20	David E. Gray	0.69
S58	05-11-19	David E. Gray	0.532
S59	05-11-03	Kevin R. Corley, et ux	13.18
S60	05-11-17	Kevin R. Corley, et ux	36.13
S61	05-11-14	Hiram's Estate Family, LTD LLP	158.054
S62 A	05-11-1.1	Larry W. Dunlap & Charles Leroy Dunlap	34.405
S63 F	05-07-33	William N. Roupe	24.60
S64	05-07-32	William N. & Virginia A. Roupe	4.2

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S65	05-07-31	William N. Roupe, et ux	43.147
S66	05-07-31.4	Grandview-Doolen PSD	0.23
S67	05-07-31.2	William N. Roupe, et ux	3.304
S68	05-07-34	WV DOH	10.88
S69	05-07-31.3	William N. & Virginia A. Roupe	0.230
S70 R	05-07-43.2	M. Frank Mason	1.36
S71	05-07-26	James A. Wade	7.80
S72	05-07-23.1	WV DOH	2.37
S73	05-07-25	WV DOH	0.50
S74	05-07-24	James A. Wade	0.578
S75	05-07-45	Robert L. Henry (Life) & Jeffrey S. Henry	0.65
S76 T	Fish Creek	State of WV	5.33(CALC.)
S77 V	05-07-3.2	Ohio Power Company	45.5348
S78	05-07-35.1	Lionel L. & Mary Lee Persinger	0.812
S79	05-07-36.1	Lionel L. & Mary Lee Persinger	0.5579
S80	05-07-23	Arlie E. Powell	1.435
S81	05-07-27.1	Mark L. Rlter, et ux	3.427
S82	05-07-23.2	Robert L. Henry (Life) & Jeffrey S. Henry	0.256
S83	05-07-21	Aaron S. Mayer	1.775
S84	05-07-22	Jesus & Mary Bustamante	0.782
S85	05-07-28.1	Jesus & Mary Bustamante	0.200
S86	05-07-28	Thelma M. Roupe	0.940
S87	05-07-18.1	Debra L. Bennett	0.13
S88	05-07-17	Debra L. Bennett	0.614
S89	05-07-15	William Roupe, et ux	6.631
S90	05-07-16	Debra L. Bennett	0.235
S91	05-07-14.2	Robert L. Elyer, Sr. & Jessica L. Bennett	0.998
S92	05-07-14.3	Steven H. Howard	2.669
S93	05-07-15.1	Woodland Hills Recreation Club	1.016
S94	05-07-13	Woodland Hills Recreation Club	1.109
S95	05-07-12	Carol A. & Shelva G. Smith	2.01
S96	05-07-14.1	Larry O. Howard, Est.	1.00
S97	05-07-11	Roy S. & Cynthia M. Meadows	2.90
S98	05-07-10.1	Sandra Kay Beymer & Chad M. Wright	4.237
S99	05-07-10	Darren Edward Thacker	4.737
S100	05-07-5.1	George A. Knuth	2.95
S101	05-07-05	CNX Gas Company, LLC	1.407
S102	05-07-06	CNX Gas Company, LLC	21.171
S103	05-07-07	Consolidation Coal Company/ Murray Energy	1.00
S104 X	05-07-02	Consolidation Coal Company/ Murray Energy	46.46
S105	05-06-03	Ohio Power Co.	281.046
S106	05-7B-01	Patricia L. Robinson	1.257
S107	05-7B-47	Daniel D. Robinson, et ux	0.1148
S108	05-7B-46	Daniel D. Robinson, et ux	0.1148
S109	05-7B-45	Daniel D. & Mary E. Robinson	0.1148
S110	05-7B-44	Daniel D. & Mary E. Robinson	0.1148
S111	05-7B-43	Teresa & Thomas Gouldsberry	0.1148
S112	05-7B-42	Teresa & Thomas Gouldsberry	0.1194
S113	05-7B-41	Teresa & Thomas Gouldsberry	0.1148
S114	05-7B-40	Teresa & Thomas Gouldsberry	0.1148
S115	05-7B-39	Teresa & Thomas Gouldsberry	0.1148
S116	05-7B-38	Teresa & Thomas Gouldsberry	0.1148
S117	05-7B-37	Teresa & Thomas Gouldsberry	0.1148
S118	05-7B-36	Albert J. Anderson, Jr.	0.1148
S119	05-7B-11	Teresa & Thomas Gouldsberry	0.1159
S120	05-7B-10	Teresa & Thomas Gouldsberry	0.1199
S121	05-7B-09	Teresa & Thomas Gouldsberry	0.1240
S122	05-7B-08	Teresa & Thomas Gouldsberry	0.1286
S123	05-7B-07	Teresa & Thomas Gouldsberry	0.1331
S124	05-7B-06	Teresa & Thomas Gouldsberry	0.1377
S125	05-7B-05	Daniel D. & Mary E. Robinson	0.1418
S126	05-7B-04	Daniel D. & Mary E. Robinson	0.1458
S127	05-7B-03	Daniel D. Robinson, et ux	0.1504
S128	05-7B-02	Daniel D. Robinson, et ux	0.1550
S129	05-8A-04	Cheryl A. & Tammie D. Persinger	1.07
S130	05-8A-05	Cheryl A. & Tammie D. Persinger	0.50
S131	05-8A-06	Cheryl A. & Tammie D. Persinger	0.48
S132	05-8A-07	Anne C. Klam	1.40
S133	05-8A-08	John Joseph Goudy	1.0
S134	05-8A-09	Kevin W. Wallace	0.323
S135	05-8A-15	Kevin R. Morris	2.06
S136	05-8A-16	John David Fromhart	2.0
S137	05-8A-17	Isaac Luke Vanscyoc	1.44
S138	05-8A-55	H. G. Energy II Appalachia, LLC	0.10
S139	05-8A-19	Mary Catherine Brooks	1.0
S140	05-8A-20	Milton Christopher White	0.19
S141	05-8A-11	Gloria Jean White & Milton Christopher White	0.19
S142	05-8A-12	Mary D. Ruckman	1.137
S143	05-8A-13	Matthew Ruckman	2.993
S144	05-8A-14	Board of Education	0.86



P.S. 708 *David L Jackson*

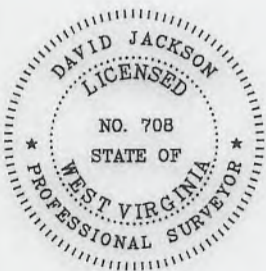
47-051-02206 H16 A



OPERATOR'S	WELL #:	<i>Michter N-6HU</i>	WELL PLAT
	DISTRICT:	<i>Franklin</i>	PAGE 3 OF 5
	COUNTY:	<i>Marshall</i>	DATE: <i>05/07/2019</i>
	STATE:	<i>WV</i>	

PG 4 OF 5 MICTHER LEASE
WELL N-6HU
224.1945± ACRES

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S145	05-8A-25	Whitney Woods	0.29
S146	05-8A-22	Whitney Woods	0.715
S147	05-8A-23	Danny Lee & Leona May Darrah	0.738
S148	05-8A-24	Clarence Paul Siburt, Hrs	0.653
S149	05-8A-26	Albert James Anderson, Jr.	1.605
S150	05-8A-27	Mary J. Siburt	8.296
S151	05-8A-28	Norman G. Johnson-Life	2.0
S152	05-8A-30	Randall Keith Keener, et ux	0.059
S153	05-8A-29	Catherine P. Rine	0.394
S154	05-8A-31	Randall K. Keener, et ux	2.346
S155	05-8A-32	Jonathan David Bopp	0.580
S156	05-8A-34	Norman G. Johnson, et ux	0.255
S157	05-8A-35	Jared C. Sills	2.780
S158	05-8A-39	Barbara L. Daniels & Elaine Wills	3.223
S159	05-8A-40	Barbara L. Daniels & Elaine Wills	0.627
S160	05-8A-38	William J. Gamble, et ux	0.35
S161	05-8A-41	William J. Gamble, et ux	0.046
S162	05-8A-37	William J. Gamble, et ux	0.706
S163	05-8A-36	William J. Gamble, et ux	1.031
S164	05-8A-33	Elaine Wills & Jeffrey D. Brooks	2.517
S165	05-8-04	C. Wayne Berisford	23.355
S166	05-8A-43	Charles G. Stein & Eva A. Wade	0.17
S167	05-8A-44	Charles G. Stein & Eva A. Wade	0.18
S168	05-8A-42	Robert M. White	7.23
S169	05-8A-49	Raymand A. Jr. & Larriette Scott	0.159
S170	05-8A-45	Raymand A. Jr. & Larriette Scott	0.305
S171	05-8A-46	Barbara L. Rose & Mary L. Rose	1.5
S172	05-8A-48	Raymond A. Jr. & Larriette Scott	2.12
S173	05-8A-52	Barbara L. Rose & Mary L. Rose	0.59
S174	05-8A-51	Lucretia M. Harrison	0.210
S175	05-8A-50	Lucretia M. Harrison	0.277
S176	05-8A-54	David D. & Christine S. Daniels	0.68
S177	05-8A-54.1	David D. & Christine S. Daniels	0.69
S178	05-8A-53	Frances E. Nieman	0.422
S179	05-8A-52	Barbara L. Rose & Mary L. Rose	0.59
S180	05-8A-4.1	Frances E. Nieman	33.461
S181 G	05-07-39	Lionel L. Persinger, et ux	57.00
S182	05-08-02	Consolidation Coal Company/ Murray Energy	136.587



P.S. 708 David L Jackson

47-051-02206



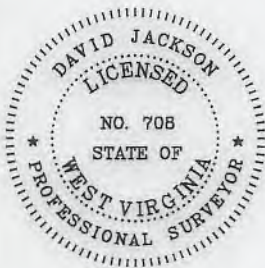
TUG HILL
OPERATING

OPERATOR'S
WELL #: Michter N-6HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 4 OF 5
DATE: 05/07/2019

PG 5 OF 5 MICTHER LEASE
WELL N-6HU
224.1945± ACRES

Lease ID	Tag	Parcel	Grantor, Lessor, Etc.	Deed Book/Page	
10*47051.089.0	A	5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
10*22667	B	5-11-21	REBEKAH DRAYER ELDRIDGE AND CHRISTOPHER ELDRIDGE	850	157
10*22773	B	5-11-21	CHRISTA DRAYER STALEY AND JOSHUA STALEY	851	3
10*22777	B	5-11-21	BOYD BUESKING	850	159
10*22780	B	5-11-21	BRENDA FAYE THOMAS PETRACK	850	161
10*22786	B	5-11-21	GUY YATES	848	206
10*22787	B	5-11-21	GAIL ANN YATES WOOD AND WESLEY J WOOD	848	208
10*22788	B	5-11-21	GENIE SUE THOMAS HOLMES AND JOHN L HOLMES	848	204
10*22801	B	5-11-21	BOYD DAIL YATES JR AND MARLA YATES	848	210
10*22808	B	5-11-21	SHIRLEY YATES HARTSELL AND FREDDIE LEE HARTSELL	848	212
10*22810	B	5-11-21	CLYDE V. & KAREN S REED	864	190
10*19751	C	5-12-10.1	THOMAS L ROBINSON	944	426
10*19752	C	5-12-10.1	PATRICIA ANKROM	944	447
10*19841	C	5-12-10.1	CAROLYN JEAN FERGUSON	945	641
10*19842	C	5-12-10.1	JAMES E ROBINSON AND CAMILLA L ROBINSON	945	643
10*19843	C	5-12-10.1	JOHN S ROBINSON AND SHERRIE J ROBINSON	945	646
10*19975	C	5-12-10.1	CHARLES F STEWART	948	270
10*47051.089.0	D	5-11-1.4	LARRY W DUNLAP AND BARBARA E DUNLAP	864	148
10*19154	E	5-12-9	ROBERT H FISH PATSY C FISH	706	631
10*22751	F	5-7-33	WILLIAM N ROUPE AND VIRGINIA A ROUPE	977	367
Q074678004	F	5-7-33	PEGGIANN E. MOSHER F/K/A PEGGY ANN GRANT AND ROWAN MOSHER	842	508
Q074648013	F	5-7-33	NICHOLAS A. OLIVER AND STEPHANIE OLIVER	850	153
Q074648002	F	5-7-33	LOIS J. LAND AND CECIL H. LAND	842	500
Q074648011	F	5-7-33	LAWRENCE K. OLIVER, II AND PHYLLIS K. OLIVER	849	645
Q074648009	F	5-7-33	KENNETH E. OLIVER AND RHONDA OLIVER	846	323
Q074648005	F	5-7-33	JOHN E. OLIVER AND GAIL S. OLIVER	842	498
Q074648008	F	5-7-33	JOAN KIDD AND ROBERT KIDD	846	329
Q074648007	F	5-7-33	JANET MILLER AND JAMES A. MILLER, JR.	846	325
Q074648003	F	5-7-33	JAMES N. OLIVER	842	502
Q074648015	F	5-7-33	DEVIN J. OLIVER	851	426
Q074648006	F	5-7-33	CRISTI LANAGHAN AND MARTIN LANAGHAN	846	327
Q074648010	F	5-7-33	CHAD L. OLIVER	849	649
Q074348012				850	155
Q074648014	F	5-7-33	WILLIAM N. KIDD, SINGLE; JARED K. KIDD, SINGLE	851	424
10*16914	G	5-7-39	LIONEL LAND AND MARY LEE PERSINGER	976	620
10*21132	H	5-7-42.5	GREGORY E RICE AND LORI MARIE RICE	951	212
10*18454	I	5-7-41	IMALEE D LLOYD AND GARY R LLOYD	933	186
10*18403	I	5-7-41	ANGELA B CRAWFORD AND DANA ALAN CRAWFORD	932	536
10*18455	I	5-7-41	DEBRA HARTLEY AND RICHARD HARTLEY	933	183
10*18724	I	5-7-41	TRACY M KESTERSON	938	521
10*21133	I	5-7-41	MATTHEW V AND CINDY L CONNER	951	602
10*24586	J	5-7-42.1	STONE HILL MINERALS HOLDINGS LLC	1025	629
041112	K	5-7-43	COLUMBIAN CHEMICALS COMPANY	691	363
10*26036	L	5-7-35	PERSINGER SAMUEL L ET UX	707	626
10*26009	M	5-7-36	PERSINGER JOHN K ET AL	711	304
10*26007	N	5-7-37	PERSINGER JOHN K ET AL	711	300
10*26007	O	5-7-38	PERSINGER JOHN K ET AL	711	300
Q091288001	P	5-7B-48	PATRICIA Y DARRAH	860	549
Q091288002	P	5-7B-48	DAVID A TAKACH AND DEBORAH TAKACH	860	507
Q091288003	P	5-7B-48	RICHARD MORGAN	860	565
Q091288004	P	5-7B-48	STANLEY DARRAH AND JOANN DARRAH	860	571
Q091288005	P	5-7B-48	DONNA L SIDIROPOLIS AND GEORGE SIDIROPOLIS	860	510
Q091288006	P	5-7B-48	RICHARD DARRAH	860	562
Q091288001	Q	5-7B-49	PATRICIA Y DARRAH	860	549
Q091288002	Q	5-7B-49	DAVID A TAKACH AND DEBORAH TAKACH	860	507
Q091288003	Q	5-7B-49	RICHARD MORGAN	860	565
Q091288004	Q	5-7B-49	STANLEY DARRAH AND JOANN DARRAH	860	571
Q091288005	Q	5-7B-49	DONNA L SIDIROPOLIS AND GEORGE SIDIROPOLIS	860	510
Q091288006	Q	5-7B-49	RICHARD DARRAH	860	562
Q075237000	R	5-7-43.2	MALISSA A MASON	787	59
Q075237000	S	5-7-43.3	MALISSA A MASON	787	59
Q091960000	T	FISH CREEK - ST OF WV	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	865	558
N/A	U	5-7-3.3	WEST VIRGINIA ECONOMIC DEVELOPMENT AUTHORITY	656	423
N/A	U	5-7-3.3	CERTAINTED GYPSUM WEST VIRGINIA, INC.	660	140
Q083442000	V	5-7-3.2	AEP GENERATION RESOURCES INC ET AL	829	157
624061	W	5-7-3.4	LOUCKS, CHARLES H; KEISTER, FENTON O, JR, ET AL	273	326
624074	X	5-7-2	GATTS, ALICE	282	394
Q074011007	Y	5-6-3.1	SUSAN WITTEN NEAL MYERS ET AL	815	375
Q074011008	Y	5-6-3.1	JANE WITTEN VOTH	853	306
Q074011003	Y	5-6-3.1	JOSEPH MOORE NEAL	859	512
Q074011006	Y	5-6-3.1	FRANCES GALE NEAL	851	218
Q074011005	Y	5-6-3.1	ANN ALEXANDER	853	310
Q074011013	Y	5-6-3.1	MARY WITTEN NEAL WISEMAN	851	216
624074	Y	5-6-3.1	GATTS, ALICE	282	394
624080	Y	5-6-3.1	GATTS, ELIZABETH R J & HARLEY	290	97
624083	Y	5-6-3.1	GATTS, LLOYD Q & MARY WOLFE	290	94
624150	Y	5-6-3.1	RINE, G W & BESSIE J	313	200
Q074011002	Y	5-6-3.1	DOROTHY ANN NEAL	851	396
Q074011004	Y	5-6-3.1	MARGERY J. WITTEN	851	398



P.S. 708 *David L Jackson*

47-051-02206 H6A



TUG HILL
OPERATING

OPERATOR'S
WELL #: Michter N-6HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 5 OF 5
DATE: 05/07/2019

**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

15-0-0-15

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*47051.089.0	5-11-1.1	A	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864 148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22667	5-11-21	B	REBEKAH DRAYER ELDRIDGE AND CHRISTOPHER ELDRIDGE	NOBLE ENERGY INC	1/8+	850 157	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22773	5-11-21	B	CHRISTA DRAYER STALEY AND JOSHUA STALEY	NOBLE ENERGY INC	1/8+	851 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22777	5-11-21	B	BOYD BUESKING	NOBLE ENERGY INC	1/8+	850 159	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22780	5-11-21	B	BRENDA FAYE THOMAS PETRACK	NOBLE ENERGY INC	1/8+	850 161	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22786	5-11-21	B	GUY YATES	NOBLE ENERGY INC	1/8+	848 206	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22787	5-11-21	B	GAIL ANN YATES WOOD AND WESLEY J WOOD	NOBLE ENERGY INC	1/8+	848 208	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22788	5-11-21	B	GENIE SUE THOMAS HOLMES AND JOHN L HOLMES	NOBLE ENERGY INC	1/8+	848 204	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22801	5-11-21	B	BOYD DAIL YATES JR AND MARLA YATES	NOBLE ENERGY INC	1/8+	848 210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22808	5-11-21	B	SHIRLEY YATES HARTSELL AND FREDDIE LEE HARTSELL	NOBLE ENERGY INC	1/8+	848 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22810	5-11-21	B	CLYDE V. & KAREN S REED	NOBLE ENERGY INC	1/8+	864 190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19751	5-12-10.1	C	THOMAS L ROBINSON	TH EXPLORATION LLC	1/8+	944 426	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19752	5-12-10.1	C	PATRICIA ANKROM	TH EXPLORATION LLC	1/8+	944 447	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19841	5-12-10.1	C	CAROLYN JEAN FERGUSON	TH EXPLORATION LLC	1/8+	945 641	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19842	5-12-10.1	C	JAMES E ROBINSON AND CAMILLA L ROBINSON	TH EXPLORATION LLC	1/8+	945 643	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19843	5-12-10.1	C	JOHN S ROBINSON AND SHERRIE J ROBINSON	TH EXPLORATION LLC	1/8+	945 646	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19975	5-12-10.1	C	CHARLES F STEWART	TH EXPLORATION LLC	1/8+	948 270	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.089.0	5-11-1.4	D	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864 148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19154	5-12-9	E	ROBERT H FISH PATSY C FISH	TRIEENERGY HOLDINGS, LLC	1/8+	706 631	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/180	AB Resources LLC & NPAR LLC to Chief Exploration & Development LLC & Radler 2000LP: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 L.P. & Eberplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 40/127
10*22751	5-7-33	F	WILLIAM N ROUPE AND VIRGINIA A ROUPE	TH EXPLORATION LLC	1/8+	977 367	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q074678004	5-7-33	F	PEGGIANN E. MOSHER F/K/A PEGGY ANN GRANT AND ROWAN MOSHER	NOBLE ENERGY INC	1/8+	842 508	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074648013	5-7-33	F	NICHOLAS A. OLIVER AND STEPHANIE OLIVER	NOBLE ENERGY INC	1/8+	850 153	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074648002	5-7-33	F	LOIS J. LAND AND CECIL H. LAND	NOBLE ENERGY INC	1/8+	842 500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

WW-6A1 Supplement

Operator's Well No. Michter N - 6HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
Q074648011	5-7-33	F	LAWRENCE K. OLIVER, II AND PHYLLIS K. OLIVER	NOBLE ENERGY INC	1/8+	849 645	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648009	5-7-33	F	KENNETH E. OLIVER AND RHONDA OLIVER	NOBLE ENERGY INC	1/8+	846 323	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648005	5-7-33	F	JOHN E. OLIVER AND GAIL S. OLIVER	NOBLE ENERGY INC	1/8+	842 498	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/309	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648008	5-7-33	F	JOAN KIDD AND ROBERT KIDD	NOBLE ENERGY INC	1/8+	846 329	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648007	5-7-33	F	JANET MILLER AND JAMES A. MILLER, JR.	NOBLE ENERGY INC	1/8+	846 325	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648003	5-7-33	F	JAMES N. OLIVER	NOBLE ENERGY INC	1/8+	842 502	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/309	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648015	5-7-33	F	DEVIN J. OLIVER	NOBLE ENERGY INC	1/8+	851 426	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648006	5-7-33	F	CRISTI LANAGHAN AND MARTIN LANAGHAN	NOBLE ENERGY INC	1/8+	846 327	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074648010	5-7-33	F	CHAD L. OLIVER	NOBLE ENERGY INC	1/8+	849 649	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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
Q074348012	5-7-33	F	WILLIAM N. KIDD, SINGLE; JARED K. KIDD, SINGLE	NOBLE ENERGY INC	1/8+	851 424	N/A	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 34/550	CNX Gas Company LLC to Noble Energy Inc: 37/169	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*16914	5-7-39	G	LIONEL L AND MARY LEE PERSINGER	TH EXPLORATION LLC	1/8+	976 620	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21132	5-7-42.5	H	GREGORY E RICE AND LORI MARIE RICE	TH EXPLORATION LLC	1/8+	951 212	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18454	5-7-41	I	IMALEE D LLOYD AND GARY R LLOYD	TH EXPLORATION LLC	1/8+	933 186	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18403	5-7-41	I	ANGELA B CRAWFORD AND DANA ALAN CRAWFORD	TH EXPLORATION LLC	1/8+	932 536	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18455	5-7-41	I	DEBRA HARTLEY AND RICHARD HARTLEY	TH EXPLORATION LLC	1/8+	933 183	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18724	5-7-41	I	TRACY M KESTERSON	TH EXPLORATION LLC	1/8+	938 521	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21133	5-7-41	I	MATTHEW V AND CINDY L CONNER	TH EXPLORATION LLC	1/8+	951 602	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*24586	5-7-42.1	J	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1025 629	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
041112	5-7-43	K	COLUMBIAN CHEMICALS COMPANY	CNX LAND RESOURCES INC	1/8+	691 363	N/A	N/A	N/A	CNX Land Resources Inc to CNX Gas Company LLC: 745/117	CNX Gas Company to Noble Energy Inc: 752/66	CNX Gas Company LLC to Noble Energy Inc: 909/64	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

5-10-20
51-02206

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*26036	5-7-35	L	PERSINGER SAMUEL L ET UX	CHESAPEAKE APPALACHIA LLC	1/8+	707	626	N/A	N/A	N/A	N/A	N/A	N/A	Chesapeake Appalachia LLC to Chevron USA Inc: 30/392	Chevron USA Inc to TH Exploration LLC: 43/95 & 43/164
10*26009	5-7-36	M	PERSINGER JOHN K ET AL	TRIENERGY HOLDINGS, LLC	1/8+	711	304	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/430	AB Resources LLC & NPAR LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 L.P. & Eberplus Resources (USA) Corp to Chevron USA Inc: 25/1	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 43/164
10*26007	5-7-37	N	PERSINGER JOHN K ET AL	TRIENERGY HOLDINGS, LLC	1/8+	711	300	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/430	AB Resources LLC & NPAR LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 L.P. & Eberplus Resources (USA) Corp to Chevron USA Inc: 25/1	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 43/164
10*26007	5-7-38	O	PERSINGER JOHN K ET AL	TRIENERGY HOLDINGS, LLC	1/8+	711	300	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 24/430	AB Resources LLC & NPAR LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/466	Chief E&D LLC, Chief O&G LLC, Radler 2000 L.P. & Eberplus Resources (USA) Corp to Chevron USA Inc: 25/1	NPAR LLC to Chevron USA Inc: 756/332	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 43/164
Q091288001	5-7B-48	P	PATRICIA Y DARRAH	NOBLE ENERGY INC	1/8+	860	549	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288002	5-7B-48	P	DAVID A TAKACH AND DEBORAH TAKACH	NOBLE ENERGY INC	1/8+	860	507	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288003	5-7B-48	P	RICHARD MORGAN	NOBLE ENERGY INC	1/8+	860	565	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288004	5-7B-48	P	STANLEY DARRAH AND JOANN DARRAH	NOBLE ENERGY INC	1/8+	860	571	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288005	5-7B-48	P	DONNA L SIDIROPOLIS AND GEORGE SIDIROPOLIS	NOBLE ENERGY INC	1/8+	860	510	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288006	5-7B-48	P	RICHARD DARRAH	NOBLE ENERGY INC	1/8+	860	562	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288001	5-7B-49	Q	PATRICIA Y DARRAH	NOBLE ENERGY INC	1/8+	860	549	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288002	5-7B-49	Q	DAVID A TAKACH AND DEBORAH TAKACH	NOBLE ENERGY INC	1/8+	860	507	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

WW-6A1 Supplement

Operator's Well No. Michter N - 6HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
Q091288003	5-7B-49	Q	RICHARD MORGAN	NOBLE ENERGY INC	1/8+	860 565	N/A	N/A	N/A	N/A	n/A	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288004	5-7B-49	Q	STANLEY DARRAH AND JOANN DARRAH	NOBLE ENERGY INC	1/8+	860 571	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288005	5-7B-49	Q	DONNA L SIDIROPOLIS AND GEORGE SIDIROPOLIS	NOBLE ENERGY INC	1/8+	860 510	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091288006	5-7B-49	Q	RICHARD DARRAH	NOBLE ENERGY INC	1/8+	860 562	N/A	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q075237000	5-7-43.2	R	MALISSA A MASON	NOBLE ENERGY INC	1/8+	787 59	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 30/302	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q075237000	5-7-43.3	S	MALISSA A MASON	NOBLE ENERGY INC	1/8+	787 59	N/A	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 30/302	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: AB 39/1	Noble Energy Inc to HG Energy II Appalachia LLC: MB 34/392	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q091960000	FISH CREEK - ST OF WV	T	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NOBLE ENERGY INC	1/8+	865 558	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
N/A	5-7-3.3	U	WEST VIRGINIA ECONOMIC DEVELOPMENT AUTHORITY	N/A	N/A	656 423	*FORCE POOL*							
N/A	5-7-3.3	U	CERTAINEED GYPSUM WEST VIRGINIA, INC.	N/A	N/A	660 140	*FORCE POOL*							
Q083442000	5-7-3.2	V	AEP GENERATION RESOURCES INC ET AL	NOBLE ENERGY INC	1/8+	829 157	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
624061	5-7-3.4	W	LOUCKS, CHARLES H; KEISTER, FENTON O, JR, ET AL	CONSOLIDATION COAL COMPANY	1/8+	273 326	N/A	N/A	N/A	Consolidation Coal Company et al to CNX Gas Company LLC: 646/493	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
624074	5-7-2	X	GATTS, ALICE	CONSOLIDATION COAL COMPANY	1/8+	282 394	N/A	N/A	N/A	Consolidation Coal Company et al to CNX Gas Company LLC: 646/493	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
Q074011007	5-6-3.1	Y	SUSAN WITTEN NEAL MYERS ET AL	NOBLE ENERGY INC	1/8+	815 375	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074011008	5-6-3.1	Y	JANE WITTEN VOTH	NOBLE ENERGY INC	1/8+	853 306	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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	Assignment	
Q074011003	5-6-3.1	Y	JOSEPH MOORE NEAL	NOBLE ENERGY INC	1/8+	859 512	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074011006	5-6-3.1	Y	FRANCES GALE NEAL	NOBLE ENERGY INC	1/8+	851 218	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074011005	5-6-3.1	Y	ANN ALEXANDER	NOBLE ENERGY INC	1/8+	853 310	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074011013	5-6-3.1	Y	MARY WITTEN NEAL WISEMAN	NOBLE ENERGY INC	1/8+	851 216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
624074	5-6-3.1	Y	GATTS, ALICE	THE M. A. HANNA COMPANY	1/8+	282 394	The M. A. Hanna Company to Pittsburgh Consolidation Coal Company: 315/417	Name Change: Pittsburgh Consolidation Coal Company to Pittsburgh Consolidation Coal Company: 6/203	Pittsburgh Consolidation Coal Company: 387/363	Consolidation Coal Company, CNX Land Resources Inc, Et Al to CNX Gas Company LLC: 646/493	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
624080	5-6-3.1	Y	GATTS, ELIZABETH R J & HARLEY	THE M. A. HANNA COMPANY	1/8+	290 97	The M. A. Hanna Company to Pittsburgh Consolidation Coal Company: 315/417	Name Change: Pittsburgh Consolidation Coal Company to Pittsburgh Consolidation Coal Company: 6/203	Pittsburgh Consolidation Coal Company: 387/363	Consolidation Coal Company, CNX Land Resources Inc, Et Al to CNX Gas Company LLC: 646/493	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
624083	5-6-3.1	Y	GATTS, LLOYD Q & MARY WOLFE	THE M. A. HANNA COMPANY	1/8+	290 94	The M. A. Hanna Company to Pittsburgh Consolidation Coal Company: 315/417	Name Change: Pittsburgh Consolidation Coal Company to Pittsburgh Consolidation Coal Company: 6/203	Pittsburgh Consolidation Coal Company: 387/363	Consolidation Coal Company, CNX Land Resources Inc, Et Al to CNX Gas Company LLC: 646/493	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
624150	5-6-3.1	Y	RINE, G W & BESSIE J	PITTSBURGH CONSOLIDATION COAL COMPANY	1/8+	313 200	N/A	Name Change: Pittsburgh Consolidation Coal Company to Pittsburgh Consolidation Coal Company: 6/203	Pittsburgh Consolidation Coal Company: 387/363	Consolidation Coal Company, CNX Land Resources Inc, Et Al to CNX Gas Company LLC: 646/493	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
Q074011002	5-6-3.1	Y	DOROTHY ANN NEAL	NOBLE ENERGY INC	1/8+	851 396	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q074011004	5-6-3.1	Y	MARGERY J. WITTEN	NOBLE ENERGY INC	1/8+	851 398	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

31-02204

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

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

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

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.

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 7th day of February, 2019 (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 February, 2019 (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. Any portion of the Leases set forth in the column entitled "Less and Except" on Exhibit A.

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.



April 5, 2019

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

RE: Michter N-6HU

Subject: Marshall County Route 27 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 27 in the area reflected on the Michter N-6HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

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

RECEIVED
Office of Oil and Gas

APR 15 2019

WV Department of
Environmental Protection

WW-6AC
(1/12)

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

Date of Notice Certification: 04/08/2019

API No. 47- 051 -
Operator's Well No. Michter N-6HU
Well Pad Name: Michter

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>517,321.47</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,405,910.66</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Larry W. Dunlap and Charles Leroy Dunlap</u>
Watershed:	<u>Fish Creek (HUC 10)</u>		

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

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

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.

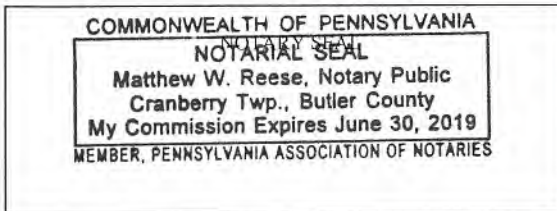
RECEIVED
 Office of Oil and Gas
 APR 15 2019
 WV Department of
 Environmental Protection

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 Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist</u>	Facsimile:	<u>412-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hill.com</u>



Subscribed and sworn before me this 8 day of April, 2019.

Matthew W. Reese Notary Public

My Commission Expires 6-30-2019

Oil and Gas Privacy Notice:

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

RECEIVED
Office of Oil and Gas

APR 15 2019

WV Department of
Environmental Protection

WW-6A
(9-13)

API NO. 47- 051 - 02206
OPERATOR WELL NO. Michter N-6HU
Well Pad Name: Michter

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: 3/23/2019 **Date Permit Application Filed:** 3/29/2019

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: Larry W. and Barbara E. Dunlap (Pad and Access Road)
Address: 1549 Irish Ridge Road
Cameron, WV 26033

Name: Karen Sue Reed and Clyde Reed (Well Pad)
Address: 100 Orchard Lane
Moundsville, WV 26041

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Charles Leroy Dunlap (Pad and Access Road)
Address: 21 Gypsy Drive
Moundsville, WV 26041

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: CNX Resources, LLC - Attn: Casey Saunders
Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15318

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: _____
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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WV Department of
Environmental Protection

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(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 include any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells. (f) Nothing in this 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

WW-6A
(8-13)

API NO. 47-051 - 0220p
OPERATOR WELL NO. Michter N-6HU
Well Pad Name: Michter

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47- 051 - 0220LP
OPERATOR WELL NO. Michter N-6HU
Well Pad Name: Michter

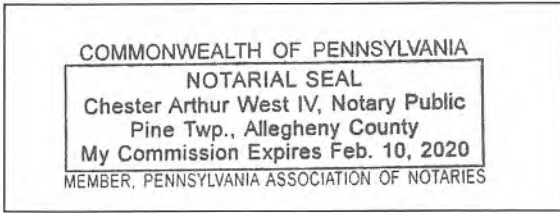
Notice is hereby given by:

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



Subscribed and sworn before me this 26th day of MARCH, 2019.
[Signature] Notary Public
My Commission Expires 2-10-2020

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WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: MICHTER N-6HU
District: Franklin
County: Marshall
State: WV

There appears to be Five (5) possible water sources within 2,000 feet of the above referenced well location.

Topo Spot # 1 TM 11 Par. 1.6 Debra Morris 304-810-0813 1082 Rines Ridge Rd. Proctor, WV 26055	Topo Spot # 2 TM 11 Par. 1.6 Debra Morris 304-810-0813 1082 Rines Ridge Rd. Proctor, WV 26055	Topo Spot # 3 TM 11 Par. 1.7 William S. & Mary K. Adams 330-718-0404 P.O. Box 303 Canfield, OH 44406
Topo Spot # 4 TM 11 Par. 1.3 Jay A. Conner, et ux 304-845-0641 1117 Rine Ridge Rd. Proctor, WV 26055	Topo Spot # 5 TM 11 Par. 21 Karen Reed, et al 304-845-7536 100 Orchard Ln. Moundsville, WV 26041	

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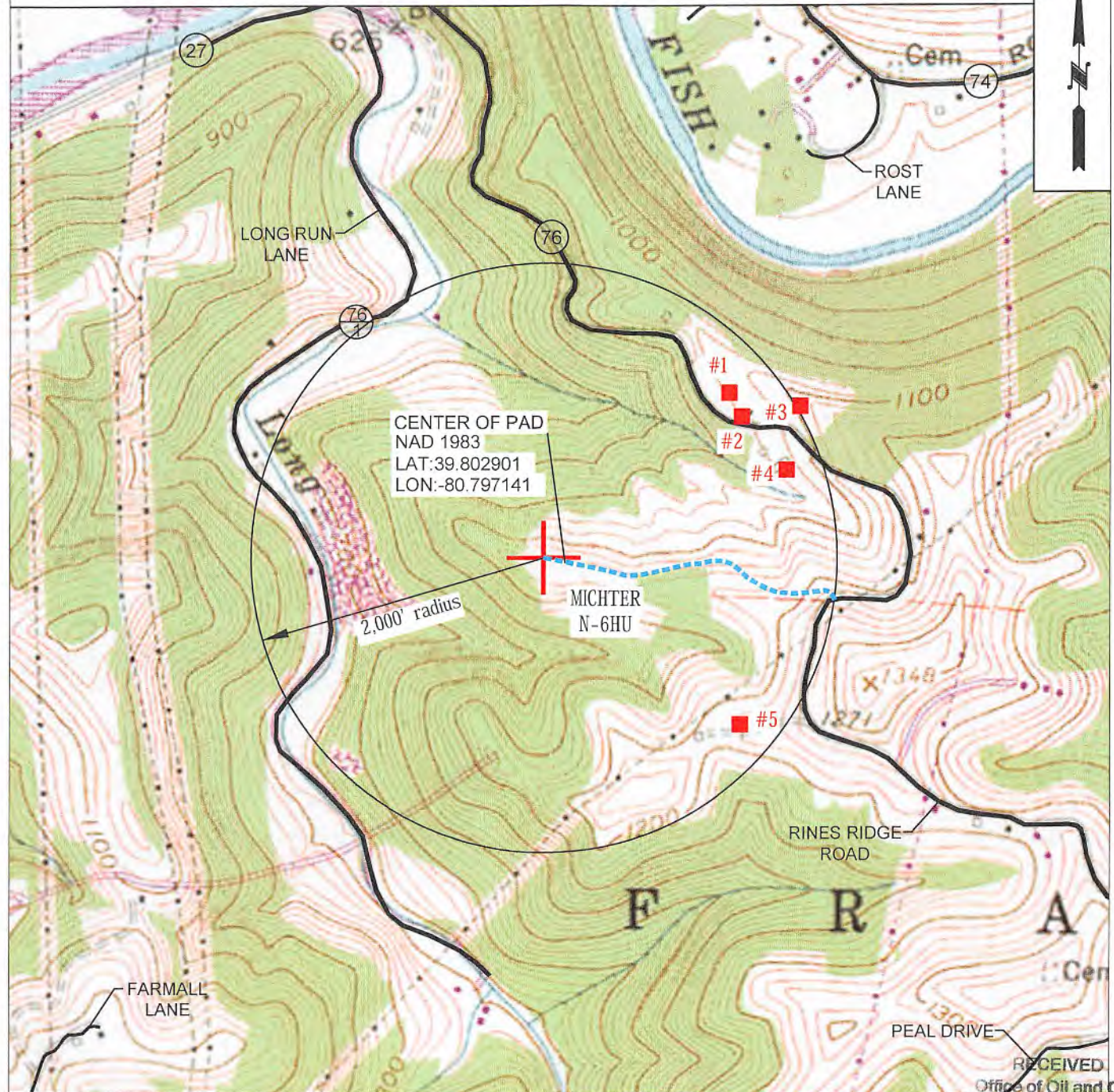
51-02206

WW-6A

PROPOSED MICHTER N-6HU

SUPPLEMENT PG 1

There appears to be Five (5) possible water sources within 2,000'.



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OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	MICHTER
		SCALE:	DATE: WV Department of Environmental Protection
		1" = 1000'	DATE: 2-4-2019

APR 15 2019

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: 1/14/2019 **Date of Planned Entry:** 1/21/2019

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Larry W. and Barbara E. Dunlap (Pad and Access Road)
 Address: 1549 Irish Ridge Road
Cameron, WV 26033

Name: Charles Leroy Dunlap (Pad and Access Road)
 Address: 21 Gypsy Drive
Moundsville, WV 26041

Name: Karen Sue Reed and Clyde Reed (Well Pad)
 Address: 100 Orchard Lane
Moundsville, WV 26041

COAL OWNER OR LESSEE

Name: CNX Land Resources, LLC Attn: Casey Saunders
 Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Larry W. and Barbara E. Dunlap (see attached list)
 Address: 1549 Irish Ridge Road
Cameron, WV 26033
 *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>39.8027785; -80.7973528</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
District: <u>Franklin</u>	Watershed: <u>Fish Creek (HUC 10)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Larry Dunlap, et al</u>

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

Notice is hereby given by:

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

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

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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.

WV Department of
Environmental Protection

51-02206

WW-6A3 NOTICE OF ENTRY FOR PLAT SURVEY

ATTACHMENT #1

WELL: MICHTER N-6HU

Mineral Owners (Well Pad)

Charles Leroy Dunlap
21 Gypsy Drive
Moundsville, WV 26041

Karen Sue Reed and Clyde Reed
100 Orchard Lane
Moundsville, WV 26041

Boyde Buesking
402 Hickory Street
Bloomington, IL 61701

Christa Drayer Staley
6725 Minier Road
Minier, IL 61759

Rebecca Drayer Eldridge
465 Harts Way
Collierville, TN 38017

Gennie Sue Thomas Holmes
704 N. School Street
Normal, IL 61761

Brenda Faye Thomas Petrack
998 Willow Drive
Pittsburgh, PA 15237

Guy Yates
4102 Blacks Road SW
Hebron, OH 43025

Boyd Dail Yates, Jr.
909 North Street
Hebron, OH 43025

Gail Ann Yates Wood
8161 Goldsmith Drive
Reynoldsburg, OH 43068

Shirley Yates Hartsell
2150 Yorkdale Lane
Reynoldsburg, OH 13068

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

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

Date of Notice: 03/27/2019 **Date Permit Application Filed:** 03/29/2019

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

- CERTIFIED MAIL HAND
- RETURN RECEIPT REQUESTED DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)

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

Name: Larry W. and Barbara E. Dunlap
Address: 4549 Irish Ridge Road
Cameron, WV 26033

Name: Karen Sue Ree and Clyde Reed (See attached list)
Address: 100 Orchard Lane
Moundsville, WV 26041

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>517,321.47</u>
County:	<u>Marshall</u>		Northing:	<u>4,405,910.66</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Rines Ridge Road (County Route 76)</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Larry W. Dunlap and Charles Leroy Dunlap</u>	
Watershed:	<u>Fish Creek (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, LLV
Telephone: 724-749-8388
Email: amiiller@tug-hillop.com

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.

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51-02206

WW-6A5 Attachment
Michter N-6HU

Additional Landowner

Charles Leroy Dunlap
21 Gypsy Drive
Moundsville, WV 26041



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Environmental Protection



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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 Michter Well Pad, Marshall County ✓

Michter N-6HU ✓

Dear Mr. Martin,

This well site will be accessed from Permit #06-2018-0480 issued to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 76 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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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Michter N-6HU

PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5
FRAC SAND	Silica Sand (various Mesh sizes)	Proppant	Crystalline silica (quartz) CAS# 14808-60-7
S-8C, Sand	Silica Sand (100 mesh)	Sand	Silica – CAS# 14808-60-7
GW-3LDF		Gellant - Water	Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0
FRW-18		Friction Reducer	Hydrotreated light distillate CAS# 064742-47-8
Scaletrol		Scale Inhibitor	Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6

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Environmental Protection



APPROVED WVDEP OOG

10/12/2018

Michter Well Site
 Site Design, Construction Plan, &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Franklin District
 Latitude 39.80290097°
 Longitude -80.79714143°
 Lower Fish Creek Watershed

Pertinent Site
 Michter W
 Emergency Number
 Franklin District, Mar
 Watershed: Lower Fish
 Tug Hill Contact Num

Property Owner Information

Owner	Dist.	Parcel	Well Prod	AC
Larry Dealy ET AL	11-1	1	6.03	
Larry Dealy ET AL	11-1	2	0.00	
Karen Reed	11-2	1	0.00	

See Exhibit 1(a) 6.28

Exhibit A: Final Design: Issue for Permitting

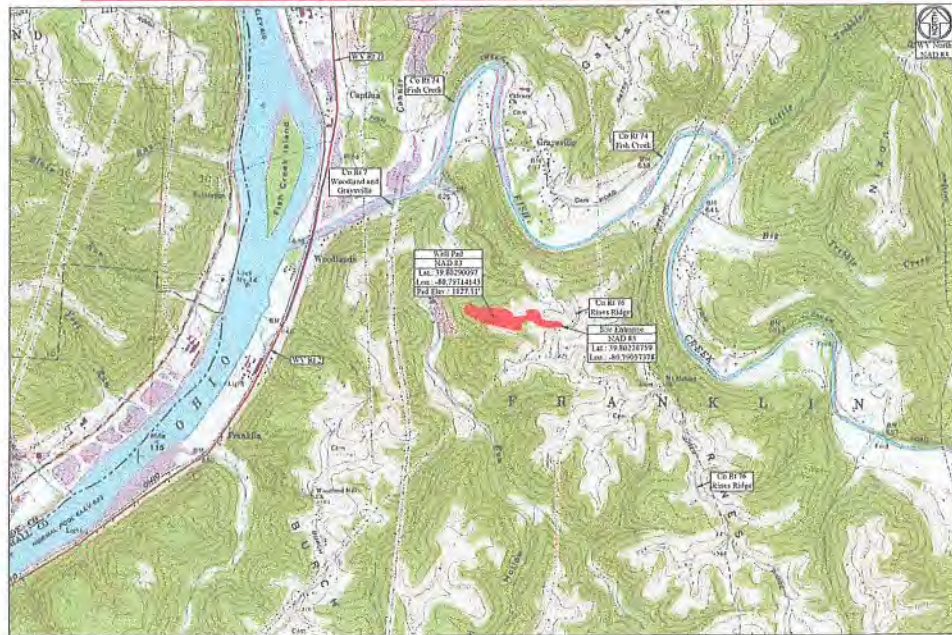
Site Reference

Center of Well Pad	Center of Well Pad
WV-N DAD 83 E: 4695925.23	WV-N DAD 83 N: 477181.39
WV-N DAD 83 E: 4695925.23	WV-N DAD 83 E: 1664981.71
WV-N DAD 27 N: 430002.29	WV-N DAD 27 N: 477152.50
WV-N DAD 27 E: 1619381.00	WV-N DAD 27 E: 1653154.54
Lat. NAD 83: 39.80290097	Lat. NAD 83: 39.80290097
Long. NAD 83: -80.79714143	Long. NAD 83: -80.79714143
Lat. NAD 27: 39.80291116	Lat. NAD 27: 39.80291116
Long. NAD 27: -80.79714143	Long. NAD 27: -80.79714143
UTM 17 NAD 83 E: 4485913.49	UTM 17 NAD 83 E: 4485913.49
UTM 17 NAD 83 E: 513298.02	UTM 17 NAD 83 E: 513298.02
	Well Elev: 1127.12



Well Pads

Michter NAD 83	Michter NAD 27	Michter NAD 83	Michter NAD 27
WV-N DAD 83 E: 47251.43	WV-N DAD 27 N: 477181.39	WV-N DAD 83 E: 47251.43	WV-N DAD 27 N: 477181.39
WV-N DAD 83 E: 1661934.15	WV-N DAD 27 E: 1653154.54	WV-N DAD 83 E: 1661934.15	WV-N DAD 27 E: 1653154.54
WV-N DAD 27 N: 477181.39	WV-N DAD 27 N: 477181.39	WV-N DAD 27 N: 477181.39	WV-N DAD 27 N: 477181.39
WV-N DAD 27 E: 1653154.54	WV-N DAD 27 E: 1653154.54	WV-N DAD 27 E: 1653154.54	WV-N DAD 27 E: 1653154.54
Lat. NAD 83: 39.80290097	Lat. NAD 83: 39.80290097	Lat. NAD 83: 39.80290097	Lat. NAD 83: 39.80290097
Long. NAD 83: -80.79714143	Long. NAD 83: -80.79714143	Long. NAD 83: -80.79714143	Long. NAD 83: -80.79714143
Lat. NAD 27: 39.80291116	Lat. NAD 27: 39.80291116	Lat. NAD 27: 39.80291116	Lat. NAD 27: 39.80291116
Long. NAD 27: -80.79714143	Long. NAD 27: -80.79714143	Long. NAD 27: -80.79714143	Long. NAD 27: -80.79714143
UTM 17 NAD 83 E: 4485913.49	UTM 17 NAD 83 E: 4485913.49	UTM 17 NAD 83 E: 4485913.49	UTM 17 NAD 83 E: 4485913.49
UTM 17 NAD 83 E: 513298.02	UTM 17 NAD 83 E: 513298.02	UTM 17 NAD 83 E: 513298.02	UTM 17 NAD 83 E: 513298.02



WV State Plane Coordinate System
 North Zone, NAD 83
 Elevation based on NAVD83
 Established by Survey Grade GPS
 and GPS/GNSS Base Stationing

Access

Surface Owner	Access
Larry Dealy ET AL	11-1

Disturb

Well Pad Control	Disturb
Access Road	11-1
Topsoil	11-1
Additional	11-1
Total	11-1

Michter Well P

Description	Disturb	Total
Well Pad	11-1	11-1
Access Road	11-1	11-1
Topsoil	11-1	11-1
Total	11-1	11-1

Project Contacts

For Hill Operations

Jonathan White - Regulatory Analyst
 724-415-2000 EXT: 304-489-7676 Cell
 304-415-2000

Service and Engineer

Kenneth Lyle
 304-364-9953 Cell
 304-415-2000

John P. Sca
 304-415-2000

Jacques Stenfort
 304-415-2000

For Hill Operations, LLC
 300 Southpointe Blvd
 Southpointe Plaza II, Suite 200
 Cranberry, PA 15107

Environment:

Wetland Delineation as provided by Albion Ecology dated April 18, 2018

Topographic Information:

The topographic information shown herein is based on aerial photography by Blue Mountains Aerial Mapping, Inc., WV

MISS UTILITY OF WEST VIRGINIA
 1-800-245-4848
 100 Virginia State Lane
 Charleston, WV 25304
 Call before you dig.

811

Know what's below. Call before you dig.

Approach Route:

From the intersection of CH R 7 and WV R 7 near New Martinsville, WV. Travel North on WV R 7 for 13.0 mi. Turn Right onto Co R 27 (Woodland and Graysville). Follow Co R 27 for 1.0 mi. Turn Right onto Co R 76 (Rinks Ridge). Follow Co R 76 for 1.5 mi. The site entrance will be on the Left (West) side of the road.

Tug Hill Operating will obtain an Encroachment Permit (Form MM-109) from the WV Department of Transportation, Division of Highways, prior to the commencement of any construction activities.

The WV Mines Website was consulted. Previous (Current) mining activities are within the AOI.

WVDEP Website files show that there are no active and/or abandoned gas wells within the AOI.

Proclamation Conditions

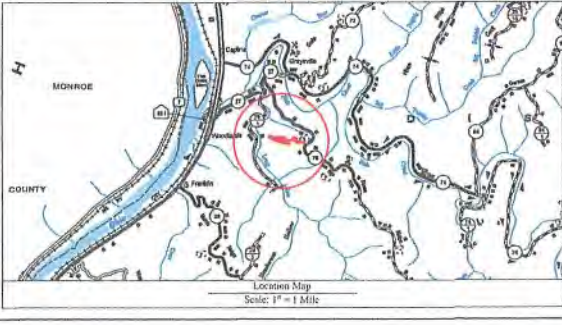
Do not encroach on or interfere with a pipeline	N/A
Do not encroach on or interfere with a power line	N/A
Do not encroach on or interfere with a water line	N/A
Do not encroach on or interfere with a gas line	N/A
Do not encroach on or interfere with a sewer line	N/A
Do not encroach on or interfere with a telephone line	N/A
Do not encroach on or interfere with a cable television line	N/A
Do not encroach on or interfere with a fire hydrant	N/A
Do not encroach on or interfere with a fire alarm box	N/A
Do not encroach on or interfere with a fire station	N/A
Do not encroach on or interfere with a fire truck	N/A
Do not encroach on or interfere with a fire engine	N/A
Do not encroach on or interfere with a fire hose	N/A
Do not encroach on or interfere with a fire extinguisher	N/A
Do not encroach on or interfere with a fire alarm	N/A
Do not encroach on or interfere with a fire bell	N/A
Do not encroach on or interfere with a fire siren	N/A
Do not encroach on or interfere with a fire whistle	N/A
Do not encroach on or interfere with a fire horn	N/A
Do not encroach on or interfere with a fire gong	N/A
Do not encroach on or interfere with a fire bell	N/A
Do not encroach on or interfere with a fire siren	N/A
Do not encroach on or interfere with a fire whistle	N/A
Do not encroach on or interfere with a fire horn	N/A
Do not encroach on or interfere with a fire gong	N/A

Site Locations (NAD 27)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.80291116	-80.79714143
Center of Well Pad	39.80290097	-80.79714143

Site Locations (NAD 83)

Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.80291116	-80.79714143
Center of Well Pad	39.80290097	-80.79714143



Well Location Restrictions

All Well Locations comply with the following restrictions:

- 750' from an existing well or deep lined spring used for human or domestic animals.
- 425' from an existing dwelling or a barn greater than 2,500 SF and for poultry or dairy livestock from the center of the pad.
- 100' from the edge of disturbance to wetlands, perennial streams, natural or artificial lakes, ponds or reservoirs.
- 100' from the edge of disturbance to a naturally protecting trout stream.
- 1,000' of a surface or ground water intake to a public water supply.

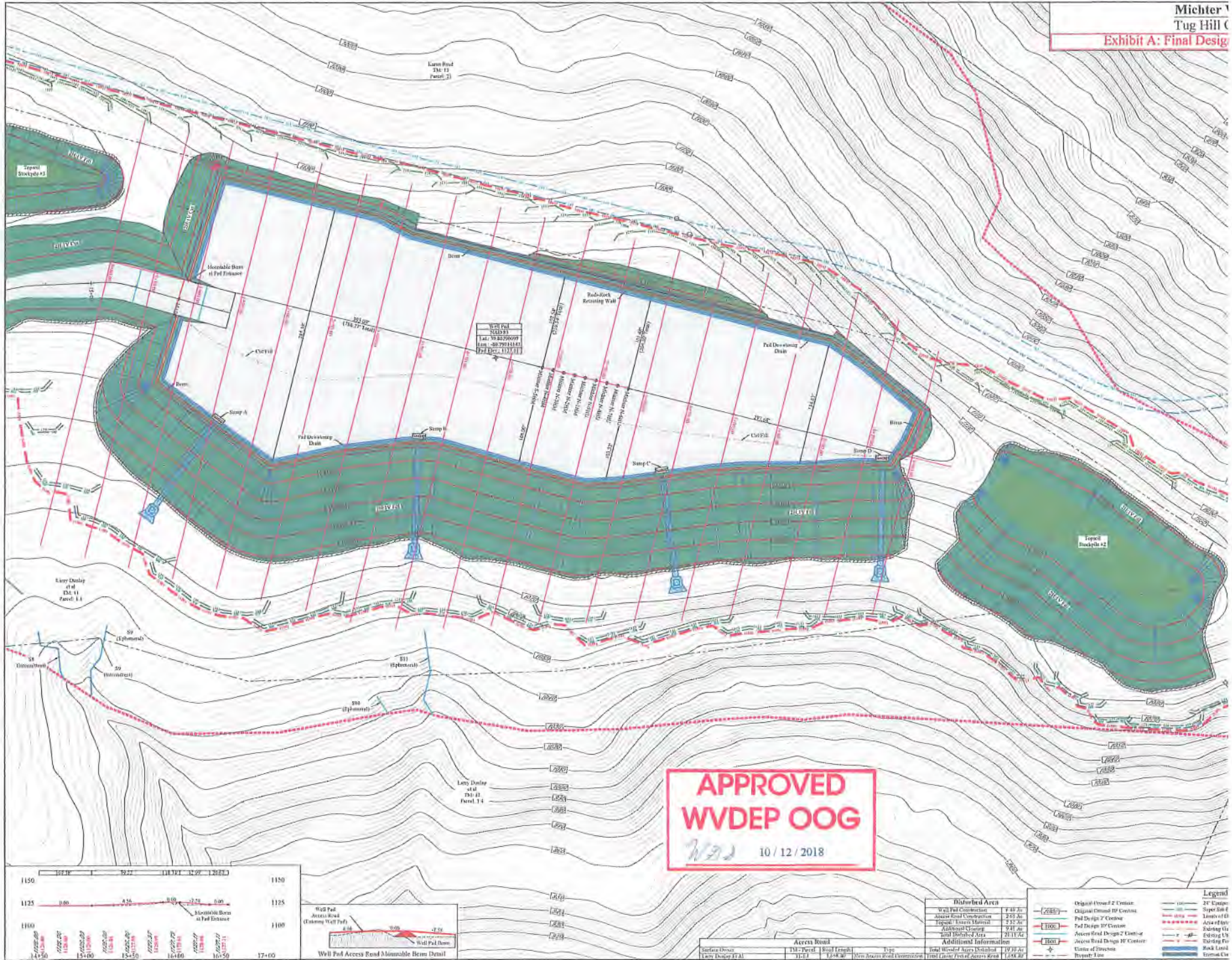
(Well Location Restrictions of WV Code 22-6-12)

Design Certificate

The design, construction and installation of this well has been prepared in accordance with the West Virginia Code and the Professional Engineering Act of the State of West Virginia.

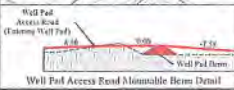
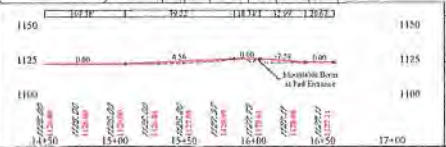
Jacques Stenfort
 304-415-2000
 100 Southpointe Blvd
 Cranberry, PA 15107

Professional Engineer



Well Pad
100793
Total: 59.82790099
Area: 400.7914481
Perimeter: 1177.111

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10 / 12 / 2018



Disturbed Area		Additional Information	
Well Pad Construction	1.47 AC	Original Ground 2' Contour	Original Ground 10' Contour
Access Road Construction	2.55 AC	Well Pad Design 2' Contour	Well Pad Design 10' Contour
Topsoil Storage Material	2.32 AC	Access Road Design 2' Contour	Access Road Design 10' Contour
Grass Seed Storage	2.34 AC	WVDEP 2' Contour	WVDEP 10' Contour
Total Disturbed Area	21.11 AC	Proposed Line	

Access Road	
Surface Elev.	1150
TM Travel - Road Length	114.4
TM Travel - Road Width	1248.30
TM Travel - Road Volume	1248.30

Legend	
100'	2' Contour
200'	5' Contour
300'	10' Contour
400'	15' Contour
500'	20' Contour
600'	25' Contour
700'	30' Contour
800'	35' Contour
900'	40' Contour
1000'	45' Contour
1100'	50' Contour
1200'	55' Contour
1300'	60' Contour
1400'	65' Contour
1500'	70' Contour
1600'	75' Contour
1700'	80' Contour
1800'	85' Contour
1900'	90' Contour
2000'	95' Contour
2100'	100' Contour
2200'	105' Contour
2300'	110' Contour
2400'	115' Contour
2500'	120' Contour
2600'	125' Contour
2700'	130' Contour
2800'	135' Contour
2900'	140' Contour
3000'	145' Contour
3100'	150' Contour
3200'	155' Contour
3300'	160' Contour
3400'	165' Contour
3500'	170' Contour
3600'	175' Contour
3700'	180' Contour
3800'	185' Contour
3900'	190' Contour
4000'	195' Contour
4100'	200' Contour
4200'	205' Contour
4300'	210' Contour
4400'	215' Contour
4500'	220' Contour
4600'	225' Contour
4700'	230' Contour
4800'	235' Contour
4900'	240' Contour
5000'	245' Contour
5100'	250' Contour
5200'	255' Contour
5300'	260' Contour
5400'	265' Contour
5500'	270' Contour
5600'	275' Contour
5700'	280' Contour
5800'	285' Contour
5900'	290' Contour
6000'	295' Contour
6100'	300' Contour
6200'	305' Contour
6300'	310' Contour
6400'	315' Contour
6500'	320' Contour
6600'	325' Contour
6700'	330' Contour
6800'	335' Contour
6900'	340' Contour
7000'	345' Contour
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7200'	355' Contour
7300'	360' Contour
7400'	365' Contour
7500'	370' Contour
7600'	375' Contour
7700'	380' Contour
7800'	385' Contour
7900'	390' Contour
8000'	395' Contour
8100'	400' Contour
8200'	405' Contour
8300'	410' Contour
8400'	415' Contour
8500'	420' Contour
8600'	425' Contour
8700'	430' Contour
8800'	435' Contour
8900'	440' Contour
9000'	445' Contour
9100'	450' Contour
9200'	455' Contour
9300'	460' Contour
9400'	465' Contour
9500'	470' Contour
9600'	475' Contour
9700'	480' Contour
9800'	485' Contour
9900'	490' Contour
10000'	495' Contour
10100'	500' Contour
10200'	505' Contour
10300'	510' Contour
10400'	515' Contour
10500'	520' Contour
10600'	525' Contour
10700'	530' Contour
10800'	535' Contour
10900'	540' Contour
11000'	545' Contour
11100'	550' Contour
11200'	555' Contour
11300'	560' Contour
11400'	565' Contour
11500'	570' Contour
11600'	575' Contour
11700'	580' Contour
11800'	585' Contour
11900'	590' Contour
12000'	595' Contour
12100'	600' Contour
12200'	605' Contour
12300'	610' Contour
12400'	615' Contour
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13200'	655' Contour
13300'	660' Contour
13400'	665' Contour
13500'	670' Contour
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13700'	680' Contour
13800'	685' Contour
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14000'	695' Contour
14100'	700' Contour
14200'	705' Contour
14300'	710' Contour
14400'	715' Contour
14500'	720' Contour
14600'	725' Contour
14700'	730' Contour
14800'	735' Contour
14900'	740' Contour
15000'	745' Contour
15100'	750' Contour
15200'	755' Contour
15300'	760' Contour
15400'	765' Contour
15500'	770' Contour
15600'	775' Contour
15700'	780' Contour
15800'	785' Contour
15900'	790' Contour
16000'	795' Contour
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16200'	805' Contour
16300'	810' Contour
16400'	815' Contour
16500'	820' Contour
16600'	825' Contour
16700'	830' Contour
16800'	835' Contour
16900'	840' Contour
17000'	845' Contour
17100'	850' Contour
17200'	855' Contour
17300'	860' Contour
17400'	865' Contour
17500'	870' Contour
17600'	875' Contour
17700'	880' Contour
17800'	885' Contour
17900'	890' Contour
18000'	895' Contour
18100'	900' Contour
18200'	905' Contour
18300'	910' Contour
18400'	915' Contour
18500'	920' Contour
18600'	925' Contour
18700'	930' Contour
18800'	935' Contour
18900'	940' Contour
19000'	945' Contour
19100'	950' Contour
19200'	955' Contour
19300'	960' Contour
19400'	965' Contour
19500'	970' Contour
19600'	975' Contour
19700'	980' Contour
19800'	985' Contour
19900'	990' Contour
20000'	995' Contour
20100'	1000' Contour
20200'	1005' Contour
20300'	1010' Contour
20400'	1015' Contour
20500'	1020' Contour
20600'	1025' Contour
20700'	1030' Contour
20800'	1035' Contour
20900'	1040' Contour
21000'	1045' Contour
21100'	1050' Contour
21200'	1055' Contour
21300'	1060' Contour
21400'	1065' Contour
21500'	1070' Contour
21600'	1075' Contour
21700'	1080' Contour
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22000'	1095' Contour
22100'	1100' Contour
22200'	1105' Contour
22300'	1110' Contour
22400'	1115' Contour
22500'	1120' Contour
22600'	1125' Contour
22700'	1130' Contour
22800'	1135' Contour
22900'	1140' Contour
23000'	1145' Contour
23100'	1150' Contour