



west virginia department of environmental protection

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

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

Monday, October 21, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for KNOB CREEK N-4HM
47-051-02267-00-00

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: KNOB CREEK N-4HM
Farm Name: DAVID LEE FRANKLIN
U.S. WELL NUMBER: 47-051-02267-00-00
Horizontal 6A New Drill
Date Issued: 10/21/2019

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.

WW-6B
(04/15)

4705102267
API NO. 47-051 -
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

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

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

2) Operator's Well Number: Knob Creek N-4HM Well Pad Name: Knob Creek

3) Farm Name/Surface Owner: David Lee Franklin Public Road Access: St. Joseph Road - CR 21

4) Elevation, current ground: 734.67' Elevation, proposed post-construction: 734.67'

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

(b) If Gas Shallow x Deep
Horizontal x

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6209' - 6259', thickness of 50' and an anticipated approximate pressure of 3800 psi.

8) Proposed Total Vertical Depth: 6359'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 19,823'

11) Proposed Horizontal Leg Length: 13,029.47'

12) Approximate Fresh Water Strata Depths: 40'; 380'

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater, or determine using pro-drill tests, testing while drilling or petrophysical evaluation of resistivity.

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickley Coal - 292' and Pittsburgh Coal - 374'

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

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

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

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(04/15)

API NO. 47-051
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

4705102267

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	503'	503'	699ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	503'	503'	699ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,804'	2,804'	903ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	19,823'	19,823'	5047ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,425'		
Liners							

8/22/19

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

Kind:	N/A				RECEIVED Office of Oil and Gas SEP - 3 2019 WV Department of Environmental Protection
Sizes:	N/A				
Depths Set:	N/A				

WW-6B
(10/14)

API NO. 47-~~661~~ **4705102267**
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

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8/22/19

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

Drill through the Marcellus tagging less than 100' from the top of the Onondaga to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

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

Well to completed with approximately 32,567,500 lb. proppant and 503,517 barrels of water.
Max rate = 80bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 12.93 acres

22) Area to be disturbed for well pad only, less access road (acres): 5.55 acres

23) Describe centralizer placement for each casing string:

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

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

*See attachment

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

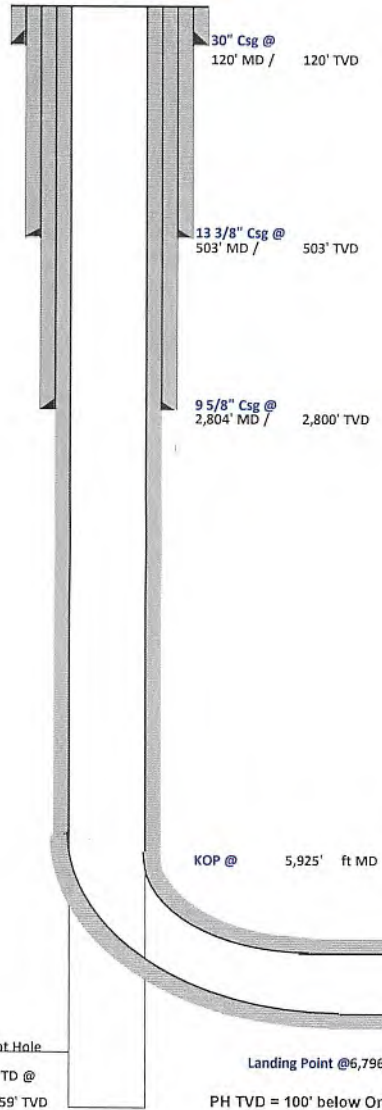


WELL NAME: Knob Creek N-4HM
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 737' GL Elev: 737'
 TD: 19,823'
 TH Latitude: 39.76996957
 TH Longitude: -80.70549917
 BH Latitude: 39.80483601
 BH Longitude: 80.72749264

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	380
Sewickley Coal	292
Pittsburgh Coal	374
Big Lime	1704
Weir	2005
Berea	2189
Gordon	2452
Rhinestreet	5567
Geneseo/Burkett	6077
Tully	6107
Hamilton	6142
Marcellus	6209
Landing Depth	6244
Onondaga	6259
Pilot Hole Depth	6359

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	17.5	13 3/8	503'	503'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,804'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	19,823'	6,017'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	678	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	924	A	15	Air	1 Centralizer every other jt
Production	4,450	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



John
8/22/19

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Pilot Hole
 PH TD @ 6,359' TVD
 Landing Point @ 6,796' MD / 6,244' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 19,823' ft MD
 6,017 ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Knob Creek N-4HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	503'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,804'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	19,823'	CTS

Cement

Conductor:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
Surface:	Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
Intermediate:	Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
Kick Off Plug:	Class H Cement + 1% CD-32 + .75% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
Production:	50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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TUG HILL
OPERATING

Well: Knob Creek N-04HM (slot J)
Site: Knob Creek
Project: Marshall County, West Virginia.
Design: rev2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	1600.00	2.00	120.00	1599.98	-0.87	1.51	2.00	120.000	-1.45	Begin 2°/100' turn
4	1651.75	2.00	90.00	1651.70	-1.32	3.20	2.00	104.991	-2.80	Begin 2.00° tangent section
5	3100.93	2.00	90.00	3100.00	-1.32	53.77	0.00	0.000	-24.87	Begin 2°/100' build/turn
6	4225.33	23.33	27.05	4192.14	199.56	176.21	2.00	-67.248	101.56	Begin 23.33° tangent section
7	5824.59	23.33	27.05	5752.47	798.94	482.21	0.00	0.000	504.90	Begin 8°/100' build
8	6354.76	50.00	347.74	6098.69	1043.20	486.07	8.00	-59.161	722.50	Begin 8°/100' build
9	6796.26	91.00	329.81	6244.00	1417.95	331.44	10.00	-26.227	1127.04	Begin 91.00° lateral section
0	19823.31	91.00	329.81	6017.00	12676.28	-6218.57	0.00	0.000	4119.44	PBHL/TD 19823.31 MD 6017.00 TVD



Azimuths to Grid North
True North: -0.19°
Magnetic North: -8.88°

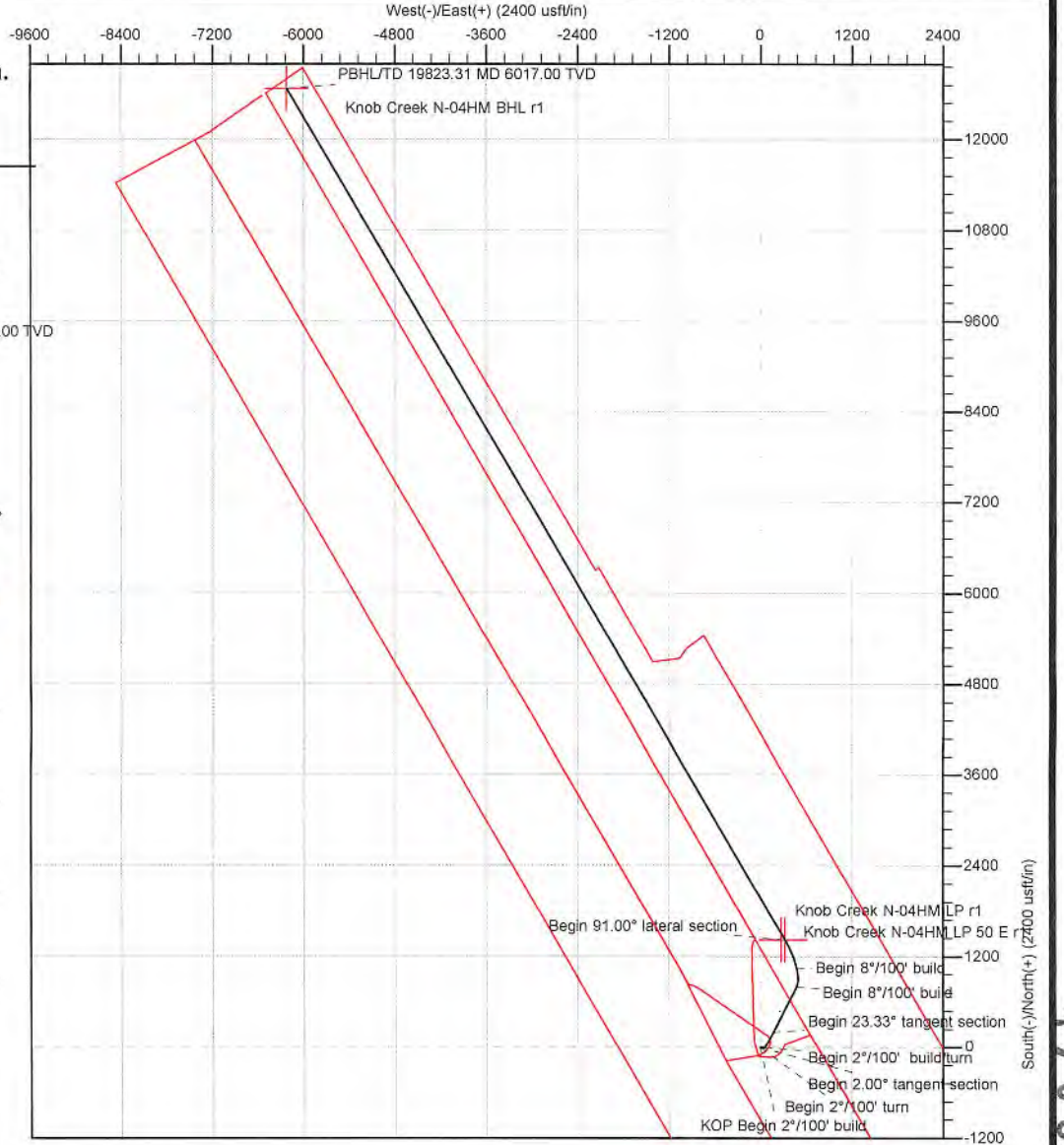
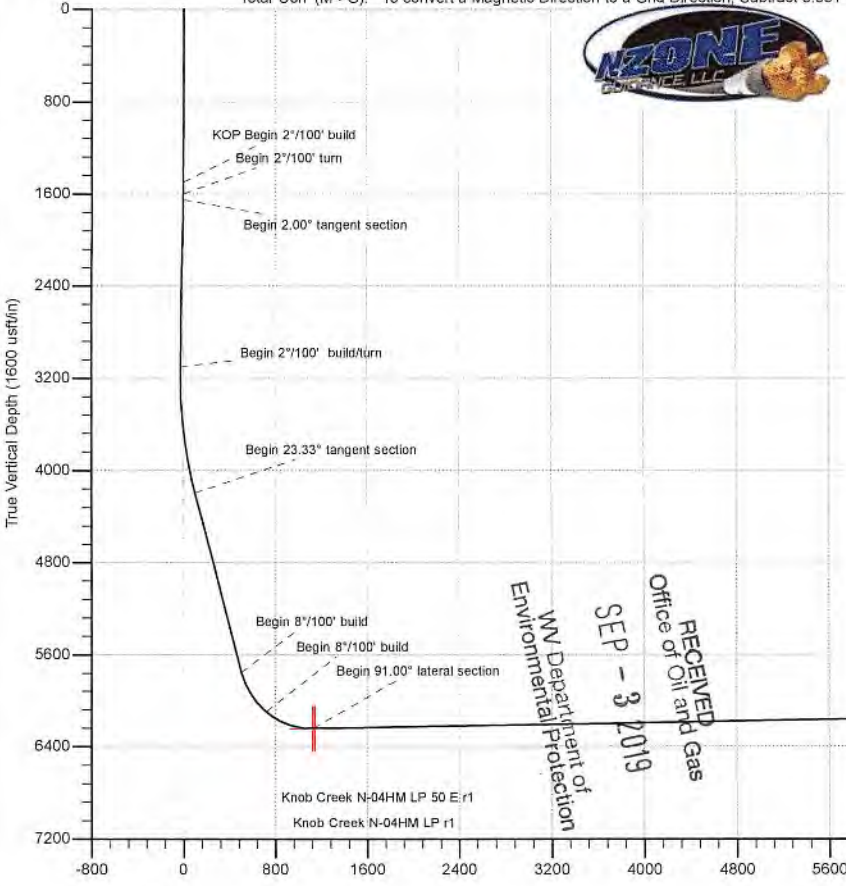
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)

Magnetic Field
Strength: 52139.6snT
Dip Angle: 66.92°
Date: 9/19/2017
Model: IGRF2015

System Datum: Mean Sea Level
Depth Reference: GL=737 @ 737.00usft
Surface location

Northing Easting Latitude Longitude
14443107.81 1723168.05 39.76996957 -80.70549917

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.881°



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PBHL/TD 19823.31 MD 6017.00 TVD
Knob Creek N-04HM BHL r1

South(-)/North(+) (2400 usft/in)

4705102267



Database:	DB_Jul2216dt_v14 It	Local Co-ordinate Reference:	Well Knob Creek N-04HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=737 @ 737.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL=737 @ 737.00usft
Site:	Knob Creek	North Reference:	Grid
Well:	Knob Creek N-04HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Knob Creek				
Site Position:		Northing:	14,443,053.74 usft	Latitude:	39.76982148
From:	Lat/Long	Easting:	1,723,120.29 usft	Longitude:	-80.70566975
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.188 °

Well	Knob Creek N-04HM (slot J)					
Well Position	+N/-S	0.00 usft	Northing:	14,443,107.82 usft	Latitude:	39.76996957
	+E/-W	0.00 usft	Easting:	1,723,168.05 usft	Longitude:	-80.70549917
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	737.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/19/2017	-8.693	66.922	52,139.56559285

Design	rev2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	333.87

Plan Survey Tool Program	Date	8/11/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	19,823.31 rev2 (Original Hole)	MWD MWD - Standard	

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Database:	DB_Jul2216dt_v14 It	Local Co-ordinate Reference:	Well Knob Creek N-04HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=737 @ 737.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL=737 @ 737.00usft
Site:	Knob Creek	North Reference:	Grid
Well:	Knob Creek N-04HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Plan Sections											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,600.00	2.00	120.00	1,599.98	-0.87	1.51	2.00	2.00	0.00	120.000		
1,651.75	2.00	90.00	1,651.70	-1.32	3.20	2.00	0.00	-57.97	-104.991		
3,100.93	2.00	90.00	3,100.00	-1.32	53.77	0.00	0.00	0.00	0.000		
4,225.33	23.33	27.05	4,192.14	199.56	176.21	2.00	1.90	-5.60	-67.248		
5,924.59	23.33	27.05	5,752.47	798.94	482.21	0.00	0.00	0.00	0.000		
6,354.76	50.00	347.74	6,098.69	1,043.20	486.07	8.00	6.20	-9.14	-59.161		
6,796.26	91.00	329.81	6,244.00	1,417.95	331.44	10.00	9.29	-4.06	-26.227		
19,823.31	91.00	329.81	6,017.00	12,676.28	-6,218.57	0.00	0.00	0.00	0.000	Knob Creek N-04HM	

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Database: DB_Jul2216dt_v14 lt
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek N-04HM (slot J)
 Wellbore: Original Hole
 Design: rev2

Local Co-ordinate Reference: Well Knob Creek N-04HM (slot J)
 TVD Reference: GL=737 @ 737.00usft
 MD Reference: GL=737 @ 737.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
100.00	0.00	0.00	100.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
200.00	0.00	0.00	200.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
300.00	0.00	0.00	300.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
400.00	0.00	0.00	400.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
500.00	0.00	0.00	500.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
600.00	0.00	0.00	600.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
700.00	0.00	0.00	700.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
800.00	0.00	0.00	800.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
900.00	0.00	0.00	900.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,443,107.82	1,723,168.05	39.76996957	-80.70549917
KOP Begin 2°/100' build									
1,600.00	2.00	120.00	1,599.98	-0.87	1.51	14,443,106.94	1,723,169.56	39.76996716	-80.70549380
Begin 2°/100' turn									
1,651.75	2.00	90.00	1,651.70	-1.32	3.20	14,443,106.49	1,723,171.25	39.76996591	-80.70548781
Begin 2.00° tangent section									
1,700.00	2.00	90.00	1,699.92	-1.32	4.88	14,443,106.49	1,723,172.93	39.76996589	-80.70548182
1,800.00	2.00	90.00	1,799.86	-1.32	8.37	14,443,106.49	1,723,176.42	39.76996586	-80.70546940
1,900.00	2.00	90.00	1,899.80	-1.32	11.86	14,443,106.49	1,723,179.91	39.76996583	-80.70545698
2,000.00	2.00	90.00	1,999.74	-1.32	15.35	14,443,106.49	1,723,183.40	39.76996580	-80.70544456
2,100.00	2.00	90.00	2,099.68	-1.32	18.84	14,443,106.49	1,723,186.89	39.76996577	-80.70543214
2,200.00	2.00	90.00	2,199.62	-1.32	22.33	14,443,106.49	1,723,190.38	39.76996573	-80.70541972
2,300.00	2.00	90.00	2,299.55	-1.32	25.82	14,443,106.49	1,723,193.87	39.76996570	-80.70540730
2,400.00	2.00	90.00	2,399.49	-1.32	29.31	14,443,106.49	1,723,197.36	39.76996567	-80.70539488
2,500.00	2.00	90.00	2,499.43	-1.32	32.80	14,443,106.49	1,723,200.85	39.76996564	-80.70538246
2,600.00	2.00	90.00	2,599.37	-1.32	36.29	14,443,106.49	1,723,204.34	39.76996561	-80.70537004
2,700.00	2.00	90.00	2,699.31	-1.32	39.78	14,443,106.49	1,723,207.83	39.76996558	-80.70535762
2,800.00	2.00	90.00	2,799.25	-1.32	43.27	14,443,106.49	1,723,211.32	39.76996554	-80.70534520
2,900.00	2.00	90.00	2,899.19	-1.32	46.76	14,443,106.49	1,723,214.81	39.76996551	-80.70533278
3,000.00	2.00	90.00	2,999.13	-1.32	50.25	14,443,106.49	1,723,218.30	39.76996548	-80.70532036
3,100.00	2.00	90.00	3,099.07	-1.32	53.74	14,443,106.49	1,723,221.79	39.76996545	-80.70530794
3,100.93	2.00	90.00	3,100.00	-1.32	53.77	14,443,106.49	1,723,221.82	39.76996545	-80.70530782
Begin 2°/100' build/turn									
3,200.00	3.32	56.54	3,198.96	0.26	57.89	14,443,108.07	1,723,225.94	39.76996975	-80.70529314
3,300.00	5.10	43.92	3,298.69	5.05	63.39	14,443,112.87	1,723,231.43	39.76998287	-80.70527353
3,400.00	7.00	37.97	3,398.13	13.06	70.22	14,443,120.88	1,723,238.27	39.77000480	-80.70524912
3,500.00	8.95	34.57	3,497.16	24.27	78.38	14,443,132.08	1,723,246.43	39.77003551	-80.70521995
3,600.00	10.91	32.38	3,595.66	38.66	87.86	14,443,146.48	1,723,255.91	39.77007496	-80.70518604
3,700.00	12.89	30.86	3,693.51	56.23	98.65	14,443,164.05	1,723,266.70	39.77012310	-80.70514744
3,800.00	14.87	29.73	3,790.58	76.94	110.73	14,443,184.76	1,723,278.78	39.77017988	-80.70510420
3,900.00	16.85	28.87	3,886.77	100.78	124.09	14,443,208.60	1,723,292.14	39.77024522	-80.70505637
4,000.00	18.84	28.18	3,981.95	127.71	138.72	14,443,235.53	1,723,306.77	39.77031905	-80.70500400
4,100.00	20.83	27.62	4,076.01	157.71	154.59	14,443,265.52	1,723,322.64	39.77040128	-80.70494717
4,200.00	22.83	27.15	4,168.84	190.73	171.69	14,443,298.54	1,723,339.73	39.77049180	-80.70488594
4,225.33	23.33	27.05	4,192.14	199.56	176.21	14,443,307.38	1,723,344.26	39.77051603	-80.70486974
Begin 23.33° tangent section									
4,300.00	23.33	27.05	4,260.71	225.90	189.65	14,443,333.72	1,723,357.70	39.77058824	-80.70482157
4,400.00	23.33	27.05	4,352.53	261.17	207.66	14,443,368.99	1,723,375.71	39.77068495	-80.70475707
4,500.00	23.33	27.05	4,444.35	296.45	225.67	14,443,404.26	1,723,393.72	39.77078165	-80.70469257

Database: DB_Jul2216dt_v14 lt
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia.
Site: Knob Creek
Well: Knob Creek N-04HM (slot J)
Wellbore: Original Hole
Design: rev2

Local Co-ordinate Reference: Well Knob Creek N-04HM (slot J)
TVD Reference: GL=737 @ 737.00usft
MD Reference: GL=737 @ 737.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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WV Department of
 Environmental Protection

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,600.00	23.33	27.05	4,536.18	331.72	243.68	14,443,439.54	1,723,411.73	39.77087836	-80.70462807
4,700.00	23.33	27.05	4,628.00	366.99	261.69	14,443,474.81	1,723,429.73	39.77097506	-80.70456357
4,800.00	23.33	27.05	4,719.82	402.27	279.69	14,443,510.08	1,723,447.74	39.77107177	-80.70449907
4,900.00	23.33	27.05	4,811.65	437.54	297.70	14,443,545.36	1,723,465.75	39.77116847	-80.70443457
5,000.00	23.33	27.05	4,903.47	472.81	315.71	14,443,580.63	1,723,483.76	39.77126518	-80.70437006
5,100.00	23.33	27.05	4,995.30	508.08	333.72	14,443,615.90	1,723,501.77	39.77136188	-80.70430556
5,200.00	23.33	27.05	5,087.12	543.36	351.73	14,443,651.17	1,723,519.77	39.77145859	-80.70424106
5,300.00	23.33	27.05	5,178.94	578.63	369.73	14,443,686.45	1,723,537.78	39.77155529	-80.70417656
5,400.00	23.33	27.05	5,270.77	613.90	387.74	14,443,721.72	1,723,555.79	39.77165200	-80.70411205
5,500.00	23.33	27.05	5,362.59	649.17	405.75	14,443,756.99	1,723,573.80	39.77174870	-80.70404755
5,600.00	23.33	27.05	5,454.41	684.45	423.76	14,443,792.26	1,723,591.81	39.77184541	-80.70398305
5,700.00	23.33	27.05	5,546.24	719.72	441.76	14,443,827.54	1,723,609.81	39.77194211	-80.70391854
5,800.00	23.33	27.05	5,638.06	754.99	459.77	14,443,862.81	1,723,627.82	39.77203882	-80.70385404
5,900.00	23.33	27.05	5,729.88	790.26	477.78	14,443,898.08	1,723,645.83	39.77213552	-80.70378954
5,924.59	23.33	27.05	5,752.47	798.94	482.21	14,443,906.76	1,723,650.26	39.77215930	-80.70377367
Begin 8°/100° build									
6,000.00	26.90	15.54	5,820.77	828.70	493.58	14,443,936.52	1,723,661.63	39.77224093	-80.70373286
6,100.00	32.69	4.37	5,907.59	877.50	501.71	14,443,985.31	1,723,669.76	39.77237487	-80.70370334
6,200.00	39.19	356.40	5,988.55	936.05	501.79	14,444,043.87	1,723,669.84	39.77253568	-80.70370238
6,300.00	46.10	350.44	6,062.09	1,003.23	493.81	14,444,111.04	1,723,661.85	39.77272022	-80.70372999
6,354.76	50.00	347.74	6,098.69	1,043.20	486.07	14,444,151.02	1,723,654.12	39.77283007	-80.70375706
Begin 8°/100° build									
6,400.00	54.08	345.27	6,126.51	1,077.87	477.73	14,444,185.68	1,723,645.78	39.77292535	-80.70378633
6,500.00	63.26	340.61	6,178.47	1,159.36	452.55	14,444,267.18	1,723,620.60	39.77314938	-80.70387499
6,600.00	72.57	336.66	6,216.04	1,245.50	418.74	14,444,353.31	1,723,586.78	39.77338625	-80.70399432
6,700.00	81.94	333.09	6,238.08	1,333.66	377.32	14,444,441.48	1,723,545.37	39.77362875	-80.70414068
6,796.26	91.00	329.81	6,244.00	1,417.95	331.44	14,444,525.77	1,723,499.49	39.77386064	-80.70430297
Begin 91.00° lateral section									
6,800.00	91.00	329.81	6,243.93	1,421.18	329.56	14,444,529.00	1,723,497.61	39.77386954	-80.70430963
6,900.00	91.00	329.81	6,242.19	1,507.61	279.28	14,444,615.42	1,723,447.33	39.77410733	-80.70448756
7,000.00	91.00	329.81	6,240.45	1,594.03	229.00	14,444,701.85	1,723,397.05	39.77434513	-80.70466549
7,100.00	91.00	329.81	6,238.71	1,680.45	178.72	14,444,788.27	1,723,346.77	39.77458292	-80.70484343
7,200.00	91.00	329.81	6,236.96	1,766.87	128.44	14,444,874.69	1,723,296.49	39.77482072	-80.70502137
7,300.00	91.00	329.81	6,235.22	1,853.30	78.16	14,444,961.11	1,723,246.21	39.77505851	-80.70519930
7,400.00	91.00	329.81	6,233.48	1,939.72	27.88	14,445,047.54	1,723,195.93	39.77529631	-80.70537724
7,500.00	91.00	329.81	6,231.74	2,026.14	-22.40	14,445,133.96	1,723,145.65	39.77553410	-80.70555518
7,600.00	91.00	329.81	6,229.99	2,112.57	-72.68	14,445,220.38	1,723,095.37	39.77577189	-80.70573312
7,700.00	91.00	329.81	6,228.25	2,198.99	-122.96	14,445,306.81	1,723,045.09	39.77600969	-80.70591107
7,800.00	91.00	329.81	6,226.51	2,285.41	-173.24	14,445,393.23	1,722,994.81	39.77624748	-80.70608901
7,900.00	91.00	329.81	6,224.77	2,371.83	-223.52	14,445,479.65	1,722,944.53	39.77648527	-80.70626695
8,000.00	91.00	329.81	6,223.02	2,458.26	-273.80	14,445,566.07	1,722,894.25	39.77672306	-80.70644490
8,100.00	91.00	329.81	6,221.28	2,544.68	-324.08	14,445,652.50	1,722,843.97	39.77696085	-80.70662285
8,200.00	91.00	329.81	6,219.54	2,631.10	-374.36	14,445,738.92	1,722,793.69	39.77719865	-80.70680080
8,300.00	91.00	329.81	6,217.80	2,717.52	-424.64	14,445,825.34	1,722,743.41	39.77743644	-80.70697875
8,400.00	91.00	329.81	6,216.05	2,803.95	-474.92	14,445,911.76	1,722,693.13	39.77767423	-80.70715670
8,500.00	91.00	329.81	6,214.31	2,890.37	-525.20	14,445,998.19	1,722,642.85	39.77791202	-80.70733465
8,600.00	91.00	329.81	6,212.57	2,976.79	-575.48	14,446,084.61	1,722,592.57	39.77814981	-80.70751260
8,700.00	91.00	329.81	6,210.83	3,063.21	-625.76	14,446,171.03	1,722,542.29	39.77838760	-80.70769056
8,800.00	91.00	329.81	6,209.08	3,149.64	-676.04	14,446,257.45	1,722,492.01	39.77862539	-80.70786851
8,900.00	91.00	329.81	6,207.34	3,236.06	-726.32	14,446,343.88	1,722,441.73	39.77886318	-80.70804647
9,000.00	91.00	329.81	6,205.60	3,322.48	-776.60	14,446,430.30	1,722,391.45	39.77910097	-80.70822443
9,100.00	91.00	329.81	6,203.86	3,408.91	-826.88	14,446,516.72	1,722,341.17	39.77933876	-80.70840239
9,200.00	91.00	329.81	6,202.11	3,495.33	-877.16	14,446,603.15	1,722,290.89	39.77957655	-80.70858035
9,300.00	91.00	329.81	6,200.37	3,581.75	-927.44	14,446,689.57	1,722,240.61	39.77981434	-80.70875831



Database: DB_Jul2216dt_v14 It
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek N-04HM (slot J)
 Wellbore: Original Hole
 Design: rev2

Local Co-ordinate Reference: Well Knob Creek N-04HM (slot J)
 TVD Reference: GL=737 @ 737.00usft
 MD Reference: GL=737 @ 737.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,400.00	91.00	329.81	6,198.63	3,668.17	-977.72	14,446,775.99	1,722,190.33	39.78005212	-80.70893628
9,500.00	91.00	329.81	6,196.89	3,754.60	-1,028.00	14,446,862.41	1,722,140.05	39.78028991	-80.70911424
9,600.00	91.00	329.81	6,195.14	3,841.02	-1,078.28	14,446,948.84	1,722,089.77	39.78052770	-80.70929221
9,700.00	91.00	329.81	6,193.40	3,927.44	-1,128.56	14,447,035.26	1,722,039.49	39.78076549	-80.70947017
9,800.00	91.00	329.81	6,191.66	4,013.86	-1,178.84	14,447,121.68	1,721,989.21	39.78100328	-80.70964814
9,900.00	91.00	329.81	6,189.92	4,100.29	-1,229.12	14,447,208.10	1,721,938.93	39.78124106	-80.70982611
10,000.00	91.00	329.81	6,188.17	4,186.71	-1,279.40	14,447,294.53	1,721,888.65	39.78147885	-80.71000408
10,100.00	91.00	329.81	6,186.43	4,273.13	-1,329.68	14,447,380.95	1,721,838.37	39.78171664	-80.71018205
10,200.00	91.00	329.81	6,184.69	4,359.56	-1,379.96	14,447,467.37	1,721,788.09	39.78195442	-80.71036003
10,300.00	91.00	329.81	6,182.95	4,445.98	-1,430.24	14,447,553.80	1,721,737.81	39.78219221	-80.71053800
10,400.00	91.00	329.81	6,181.20	4,532.40	-1,480.52	14,447,640.22	1,721,687.53	39.78242999	-80.71071597
10,500.00	91.00	329.81	6,179.46	4,618.82	-1,530.80	14,447,726.64	1,721,637.25	39.78266778	-80.71089395
10,600.00	91.00	329.81	6,177.72	4,705.25	-1,581.08	14,447,813.06	1,721,586.97	39.78290556	-80.71107193
10,700.00	91.00	329.81	6,175.98	4,791.67	-1,631.36	14,447,899.49	1,721,536.69	39.78314335	-80.71124991
10,800.00	91.00	329.81	6,174.23	4,878.09	-1,681.64	14,447,985.91	1,721,486.41	39.78338113	-80.71142789
10,900.00	91.00	329.81	6,172.49	4,964.51	-1,731.92	14,448,072.33	1,721,436.13	39.78361892	-80.71160587
11,000.00	91.00	329.81	6,170.75	5,050.94	-1,782.20	14,448,158.75	1,721,385.85	39.78385670	-80.71178385
11,100.00	91.00	329.81	6,169.01	5,137.36	-1,832.48	14,448,245.18	1,721,335.57	39.78409448	-80.71196184
11,200.00	91.00	329.81	6,167.26	5,223.78	-1,882.76	14,448,331.60	1,721,285.29	39.78433227	-80.71213982
11,300.00	91.00	329.81	6,165.52	5,310.20	-1,933.04	14,448,418.02	1,721,235.01	39.78457005	-80.71231781
11,400.00	91.00	329.81	6,163.78	5,396.63	-1,983.32	14,448,504.44	1,721,184.73	39.78480783	-80.71249580
11,500.00	91.00	329.81	6,162.04	5,483.05	-2,033.60	14,448,590.87	1,721,134.45	39.78504562	-80.71267379
11,600.00	91.00	329.81	6,160.29	5,569.47	-2,083.88	14,448,677.29	1,721,084.17	39.78528340	-80.71285178
11,700.00	91.00	329.81	6,158.55	5,655.90	-2,134.16	14,448,763.71	1,721,033.89	39.78552118	-80.71302977
11,800.00	91.00	329.81	6,156.81	5,742.32	-2,184.44	14,448,850.14	1,720,983.61	39.78575896	-80.71320776
11,900.00	91.00	329.81	6,155.07	5,828.74	-2,234.72	14,448,936.56	1,720,933.33	39.78599674	-80.71338575
12,000.00	91.00	329.81	6,153.32	5,915.16	-2,285.00	14,449,022.98	1,720,883.05	39.78623452	-80.71356375
12,100.00	91.00	329.81	6,151.58	6,001.59	-2,335.28	14,449,109.40	1,720,832.77	39.78647230	-80.71374175
12,200.00	91.00	329.81	6,149.84	6,088.01	-2,385.56	14,449,195.83	1,720,782.49	39.78671009	-80.71391974
12,300.00	91.00	329.81	6,148.10	6,174.43	-2,435.84	14,449,282.25	1,720,732.21	39.78694787	-80.71409774
12,400.00	91.00	329.81	6,146.35	6,260.85	-2,486.12	14,449,368.67	1,720,681.93	39.78718565	-80.71427574
12,500.00	91.00	329.81	6,144.61	6,347.28	-2,536.40	14,449,455.09	1,720,631.65	39.78742343	-80.71445374
12,600.00	91.00	329.81	6,142.87	6,433.70	-2,586.68	14,449,541.52	1,720,581.37	39.78766120	-80.71463174
12,700.00	91.00	329.81	6,141.13	6,520.12	-2,636.96	14,449,627.94	1,720,531.09	39.78789898	-80.71480975
12,800.00	91.00	329.81	6,139.38	6,606.55	-2,687.24	14,449,714.36	1,720,480.81	39.78813676	-80.71498775
12,900.00	91.00	329.81	6,137.64	6,692.97	-2,737.52	14,449,800.79	1,720,430.53	39.78837454	-80.71516576
13,000.00	91.00	329.81	6,135.90	6,779.39	-2,787.80	14,449,887.21	1,720,380.25	39.78861232	-80.71534377
13,100.00	91.00	329.81	6,134.15	6,865.81	-2,838.08	14,449,973.63	1,720,329.97	39.78885010	-80.71552177
13,200.00	91.00	329.81	6,132.41	6,952.24	-2,888.36	14,450,060.05	1,720,279.69	39.78908788	-80.71569978
13,300.00	91.00	329.81	6,130.67	7,038.66	-2,938.64	14,450,146.48	1,720,229.41	39.78932565	-80.71587780
13,400.00	91.00	329.81	6,128.93	7,125.08	-2,988.92	14,450,232.90	1,720,179.13	39.78956343	-80.71605581
13,500.00	91.00	329.81	6,127.18	7,211.50	-3,039.20	14,450,319.32	1,720,128.85	39.78980121	-80.71623382
13,600.00	91.00	329.81	6,125.44	7,297.93	-3,089.48	14,450,405.74	1,720,078.57	39.79003898	-80.71641184
13,700.00	91.00	329.81	6,123.70	7,384.35	-3,139.76	14,450,492.17	1,720,028.29	39.79027676	-80.71658985
13,800.00	91.00	329.81	6,121.96	7,470.77	-3,190.04	14,450,578.59	1,719,978.01	39.79051454	-80.71676787
13,900.00	91.00	329.81	6,120.21	7,557.19	-3,240.32	14,450,665.01	1,719,927.73	39.79075231	-80.71694589
14,000.00	91.00	329.81	6,118.47	7,643.62	-3,290.60	14,450,751.43	1,719,877.45	39.79099009	-80.71712391
14,100.00	91.00	329.81	6,116.73	7,730.04	-3,340.88	14,450,837.86	1,719,827.17	39.79122786	-80.71730193
14,200.00	91.00	329.81	6,114.99	7,816.46	-3,391.16	14,450,924.28	1,719,776.89	39.79146564	-80.71747995
14,300.00	91.00	329.81	6,113.24	7,902.89	-3,441.44	14,451,010.70	1,719,726.61	39.79170341	-80.71765797
14,400.00	91.00	329.81	6,111.50	7,989.31	-3,491.72	14,451,097.13	1,719,676.33	39.79194119	-80.71783600
14,500.00	91.00	329.81	6,109.76	8,075.73	-3,542.00	14,451,183.55	1,719,626.05	39.79217896	-80.71801402
14,600.00	91.00	329.81	6,108.02	8,162.15	-3,592.28	14,451,269.97	1,719,575.77	39.79241673	-80.71819205
14,700.00	91.00	329.81	6,106.27	8,248.58	-3,642.56	14,451,356.39	1,719,525.49	39.79265451	-80.71837008
14,800.00	91.00	329.81	6,104.53	8,335.00	-3,692.84	14,451,442.82	1,719,475.21	39.79289228	-80.71854811



Planning Report - Geographic

4705102267

Database: DB_Jul2216dt_v14 ft
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek N-04HM (slot J)
 Wellbore: Original Hole
 Design: rev2

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

Well Knob Creek N-04HM (slot J)
 GL=737 @ 737.00usft
 GL=737 @ 737.00usft
 Grid
 Minimum Curvature

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,900.00	91.00	329.81	6,102.79	8,421.42	-3,743.12	14,451,529.24	1,719,424.93	39.79313005	-80.71872614
15,000.00	91.00	329.81	6,101.05	8,507.84	-3,793.40	14,451,615.66	1,719,374.65	39.79336783	-80.71890417
15,100.00	91.00	329.81	6,099.30	8,594.27	-3,843.68	14,451,702.08	1,719,324.37	39.79360560	-80.71908220
15,200.00	91.00	329.81	6,097.56	8,680.69	-3,893.96	14,451,788.51	1,719,274.09	39.79384337	-80.71926024
15,300.00	91.00	329.81	6,095.82	8,767.11	-3,944.24	14,451,874.93	1,719,223.81	39.79408114	-80.71943827
15,400.00	91.00	329.81	6,094.08	8,853.54	-3,994.52	14,451,961.35	1,719,173.52	39.79431892	-80.71961631
15,500.00	91.00	329.81	6,092.33	8,939.96	-4,044.80	14,452,047.78	1,719,123.24	39.79455669	-80.71979435
15,600.00	91.00	329.81	6,090.59	9,026.38	-4,095.08	14,452,134.20	1,719,072.96	39.79479446	-80.71997238
15,700.00	91.00	329.81	6,088.85	9,112.80	-4,145.36	14,452,220.62	1,719,022.68	39.79503223	-80.72015042
15,800.00	91.00	329.81	6,087.11	9,199.23	-4,195.64	14,452,307.04	1,718,972.40	39.79527000	-80.72032847
15,900.00	91.00	329.81	6,085.36	9,285.65	-4,245.92	14,452,393.47	1,718,922.12	39.79550777	-80.72050651
16,000.00	91.00	329.81	6,083.62	9,372.07	-4,296.20	14,452,479.89	1,718,871.84	39.79574554	-80.72068455
16,100.00	91.00	329.81	6,081.88	9,458.49	-4,346.48	14,452,566.31	1,718,821.56	39.79598331	-80.72086260
16,200.00	91.00	329.81	6,080.14	9,544.92	-4,396.76	14,452,652.73	1,718,771.28	39.79622108	-80.72104064
16,300.00	91.00	329.81	6,078.39	9,631.34	-4,447.04	14,452,739.16	1,718,721.00	39.79645885	-80.72121869
16,400.00	91.00	329.81	6,076.65	9,717.76	-4,497.32	14,452,825.58	1,718,670.72	39.79669662	-80.72139674
16,500.00	91.00	329.81	6,074.91	9,804.18	-4,547.60	14,452,912.00	1,718,620.44	39.79693439	-80.72157479
16,600.00	91.00	329.81	6,073.17	9,890.61	-4,597.88	14,452,998.42	1,718,570.16	39.79717215	-80.72175284
16,700.00	91.00	329.81	6,071.42	9,977.03	-4,648.16	14,453,084.85	1,718,519.88	39.79740992	-80.72193089
16,800.00	91.00	329.81	6,069.68	10,063.45	-4,698.44	14,453,171.27	1,718,469.60	39.79764769	-80.72210895
16,900.00	91.00	329.81	6,067.94	10,149.88	-4,748.72	14,453,257.69	1,718,419.32	39.79788546	-80.72228700
17,000.00	91.00	329.81	6,066.20	10,236.30	-4,799.00	14,453,344.12	1,718,369.04	39.79812322	-80.72246506
17,100.00	91.00	329.81	6,064.45	10,322.72	-4,849.28	14,453,430.54	1,718,318.76	39.79836099	-80.72264312
17,200.00	91.00	329.81	6,062.71	10,409.14	-4,899.56	14,453,516.96	1,718,268.48	39.79859876	-80.72282118
17,300.00	91.00	329.81	6,060.97	10,495.57	-4,949.84	14,453,603.38	1,718,218.20	39.79883652	-80.72299924
17,400.00	91.00	329.81	6,059.23	10,581.99	-5,000.12	14,453,689.81	1,718,167.92	39.79907429	-80.72317730
17,500.00	91.00	329.81	6,057.48	10,668.41	-5,050.40	14,453,776.23	1,718,117.64	39.79931206	-80.72335536
17,600.00	91.00	329.81	6,055.74	10,754.83	-5,100.68	14,453,862.65	1,718,067.36	39.79954982	-80.72353342
17,700.00	91.00	329.81	6,054.00	10,841.26	-5,150.97	14,453,949.07	1,718,017.08	39.79978759	-80.72371149
17,800.00	91.00	329.81	6,052.26	10,927.68	-5,201.25	14,454,035.50	1,717,966.80	39.80002535	-80.72388955
17,900.00	91.00	329.81	6,050.51	11,014.10	-5,251.53	14,454,121.92	1,717,916.52	39.80026312	-80.72406762
18,000.00	91.00	329.81	6,048.77	11,100.52	-5,301.81	14,454,208.34	1,717,866.24	39.80050088	-80.72424569
18,100.00	91.00	329.81	6,047.03	11,186.95	-5,352.09	14,454,294.76	1,717,815.96	39.80073864	-80.72442376
18,200.00	91.00	329.81	6,045.29	11,273.37	-5,402.37	14,454,381.19	1,717,765.68	39.80097641	-80.72460183
18,300.00	91.00	329.81	6,043.54	11,359.79	-5,452.65	14,454,467.61	1,717,715.40	39.80121417	-80.72477990
18,400.00	91.00	329.81	6,041.80	11,446.22	-5,502.93	14,454,554.03	1,717,665.12	39.80145194	-80.72495797
18,500.00	91.00	329.81	6,040.06	11,532.64	-5,553.21	14,454,640.46	1,717,614.84	39.80168970	-80.72513605
18,600.00	91.00	329.81	6,038.32	11,619.06	-5,603.49	14,454,726.88	1,717,564.56	39.80192746	-80.72531412
18,700.00	91.00	329.81	6,036.57	11,705.48	-5,653.77	14,454,813.30	1,717,514.28	39.80216522	-80.72549220
18,800.00	91.00	329.81	6,034.83	11,791.91	-5,704.05	14,454,899.72	1,717,464.00	39.80240299	-80.72567028
18,900.00	91.00	329.81	6,033.09	11,878.33	-5,754.33	14,454,986.15	1,717,413.72	39.80264075	-80.72584836
19,000.00	91.00	329.81	6,031.35	11,964.75	-5,804.61	14,455,072.57	1,717,363.44	39.80287851	-80.72602644
19,100.00	91.00	329.81	6,029.60	12,051.17	-5,854.89	14,455,158.99	1,717,313.16	39.80311627	-80.72620452
19,200.00	91.00	329.81	6,027.86	12,137.60	-5,905.17	14,455,245.41	1,717,262.88	39.80335403	-80.72638260
19,300.00	91.00	329.81	6,026.12	12,224.02	-5,955.45	14,455,331.84	1,717,212.60	39.80359179	-80.72656069
19,400.00	91.00	329.81	6,024.38	12,310.44	-6,005.73	14,455,418.26	1,717,162.32	39.80382955	-80.72673877
19,500.00	91.00	329.81	6,022.63	12,396.87	-6,056.01	14,455,504.68	1,717,112.04	39.80406731	-80.72691686
19,600.00	91.00	329.81	6,020.89	12,483.29	-6,106.29	14,455,591.11	1,717,061.76	39.80430507	-80.72709495
19,700.00	91.00	329.81	6,019.15	12,569.71	-6,156.57	14,455,677.53	1,717,011.48	39.80454283	-80.72727304
19,800.00	91.00	329.81	6,017.41	12,656.13	-6,206.85	14,455,763.95	1,716,961.20	39.80478059	-80.72745113
19,823.31	91.00	329.81	6,017.00	12,676.28	-6,218.57	14,455,784.10	1,716,949.48	39.80483601	-80.72749264

PBHL/TD 19823.31 MD 6017.00 TVD



Database:	DB_Jul2216dt_v14 It	Local Co-ordinate Reference:	Well Knob Creek N-04HM (slot J)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=737 @ 737.00usft
Project:	Marshall County, West Virginia.	MD Reference:	GL=737 @ 737.00usft
Site:	Knob Creek	North Reference:	Grid
Well:	Knob Creek N-04HM (slot J)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets										
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)			
- Shape										
Knob Creek N-04HM BH - plan hits target center - Point	0.00	0.00	6,017.00	12,676.28	-6,218.57	14,455,784.10	1,716,949.48	39.80483601	-80.72749264	
Knob Creek N-04HM LP - plan misses target center by 0.01usft at 6796.26usft MD (6244.00 TVD, 1417.95 N, 331.44 E) - Point	0.00	0.00	6,244.00	1,417.95	331.43	14,444,525.76	1,723,499.48	39.77386063	-80.70430299	
Knob Creek N-04HM LP - plan misses target center by 43.23usft at 6821.40usft MD (6243.56 TVD, 1439.68 N, 318.80 E) - Point	0.00	0.00	6,244.00	1,417.95	281.43	14,444,525.76	1,723,449.48	39.77386108	-80.70448095	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 2°/100' build
1,600.00	1,599.98	-0.87	1.51	Begin 2°/100' turn
1,651.75	1,651.70	-1.32	3.20	Begin 2.00° tangent section
3,100.93	3,100.00	-1.32	53.77	Begin 2°/100' build/turn
4,225.33	4,192.14	199.56	176.21	Begin 23.33° tangent section
5,924.59	5,752.47	798.94	482.21	Begin 8°/100' build
6,354.76	6,098.69	1,043.20	486.07	Begin 8°/100' build
6,796.26	6,244.00	1,417.95	331.44	Begin 91.00° lateral section
19,823.31	6,017.00	12,676.28	-6,218.57	PBHL/TD 19823.31 MD 6017.00 TVD

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (08/14/2019) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

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

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

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

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Permit well - Knob Creek N-4HM

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
4705130347	Hope Natural Gas Company	2355' TVD	Gordon Sandstone	Unknown	No, Well is too shallow to be within reasonable distance for fracture propagation from a Marcellus horizontal well.	State well records are incomplete. Well records do not indicate production or that the well has been plugged
4705170063	Hope Natural Gas Company	2941' TVD	Gordon Sand	Unknown	Unknown but unlikely, Appears to be an old shallow well, coal test bore hole or CBM well. Well has been plugged.	Well records incomplete. Well records do not indicate production or that the well has been plugged
4705130244	Hope Natural Gas Company	2470' TVD	Gordon Sandstone	Unknown	No, Well is too shallow to be within reasonable distance for fracture propagation from a Marcellus horizontal well. Well has been plugged.	Well plugged 6/7/1946
4705130405	Whilhelm & Jackson	unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well. Well has been plugged.	Well plugged 12/4/1959

WV Geological & Economic Survey Well: County = 51 Permit = 30347

Location Information: [View Map](#)

API: 4705130347 COUNTY: Morgan PERMIT: 30347 TAX_DISTRICT: 114562 QUAD_75: 114562 QUAD_15_LAY_CD: 10N_00_01 TIME: 010N UTMN: 18Q UTMX: 18Q

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_AY	COMPLETION	PROP_VD	PROP_TRTY_FM	TFM_EST_FR
4705130347	3/25/1909	Original Loc	Completed	WVA Encumber	802				Unknown	Hope Natural Gas Company				

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DAYUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MYRD	TVD	TMD	NEW_FTO	RCD	G_BEF	G_AFT
4705130347	3/25/1909	2/18/1909	718	Ground Level	Unknown	Gas	Reasonable	Reasonable	Development Well	Unknown	Gas	Surface Top	Unknown	2800		0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705130347	3/25/1909	Pay	Gas	Yards			2745	Gas	0	0			

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV DAYUM
4705130347	Original Loc	Unclassified cca	Well Record	90	Reasonable	5	Reasonable	718
4705130347	Original Loc	Sandy clay coal	Well Record	205	Reasonable	5	Reasonable	718
4705130347	Original Loc	Pebbly coal	Well Record	360	Reasonable	0	Reasonable	718
4705130347	Original Loc	Mansong Ss Big Dunk	Well Record	700	Reasonable	20	Reasonable	718
4705130347	Original Loc	Ss Sands (uncrt)	Well Record	1005	Reasonable	225	Reasonable	718
4705130347	Original Loc	Big Lime	Well Record	1440	Reasonable	45	Reasonable	718
4705130347	Original Loc	Big Iron (uncrt)	Well Record	1485	Reasonable	275	Reasonable	718
4705130347	Original Loc	Gordon	Well Record	2325	Reasonable	13	Reasonable	718

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

Plugging Information:

API	PLG_DT	DEPTH_PRT
4705130347	3/20/1909	0

There is no Sample data for this well

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4705102267

WV Geological & Economic Survey **Well: County = 51 Permit = 70063**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725170063	Marshall	70063	Meade	Old Easton	Camden	39.782026	-80.702082	624611.3	4402550.6

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_TROT_FM	TRM_EST_PR
4725170063	--	--	Original Loc	Completed	John Elie	1	502			Hooks Natural Gas Company			

Completion Information:

API	CMP_DT	SFUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	O_AFT	O_BEF	
4725170063	--	--	1243	Beckman	Gascon 11.75M	Gascon 14.0M	undesignated	undesignated	Gas	unknown	unknown	2641			2641				

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

WV Geological & Economic Survey **Well: County = 51 Permit = 30244**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725130244	Marshall	30244	Meade	Old Easton	Camden	39.773114	-80.702173	625570.5	4402466.7

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_TROT_FM	TRM_EST_PR
4725130244	8/23/1954		Original Loc	Completed	George B Alley	1	567	1075		Hooks Natural Gas Company			

Completion Information:

API	CMP_DT	SFUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF	O_AFT	O_BEF
4725130244	8/23/1954	8/23/1954	Gas	Verde	Section	2405	Gascon	0	0					2475			

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM TOP	DEPTH_BOTTOM	FM BOT	G_BEF	O_AFT	O_BEF	WATER_GNTY
4725130244	8/23/1954	Pay	Gas	Verde			2405	Gascon	0	0		

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV DATUM		
4725130244		Original Loc	Undersand coal	Well Record	153	Reasonable	5	Reasonable	775	Ground Level
4725130244		Original Loc	Sandstone coal	Well Record	223	Reasonable	5	Reasonable	775	Ground Level
4725130244		Original Loc	Pittsburgh coal	Well Record	418	Reasonable	4	Reasonable	775	Ground Level
4725130244		Original Loc	Starting 2 1/2' Duff	Well Record	735	Reasonable	25	Reasonable	775	Ground Level
4725130244		Original Loc	Big (unsoft)	Well Record	1150	Reasonable	20	Reasonable	775	Ground Level
4725130244		Original Loc	Big Lime	Well Record	1405	Reasonable	50	Reasonable	775	Ground Level
4725130244		Original Loc	Big (unsoft)	Well Record	1545	Reasonable	20	Reasonable	775	Ground Level
4725130244		Original Loc	Carbon Shale	Well Record	2145	Reasonable	5	Reasonable	775	Ground Level
4725130244		Original Loc	Section	Well Record	2150	Reasonable	12	Reasonable	775	Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4725130244	8/7/1948	0

There is no Sample data for this well

WV Geological & Economic Survey **Well: County = 51 Permit = 30405**

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4725130405	Marshall	30405	Meade	Old Easton	Camden	39.775924	-80.702988	625282.1	4402341.2

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_TROT_FM	TRM_EST_PR
4725130405	11/1903		Original Loc	Completed	Hannah E Robinson	455	HOPE	2005		OP&A M Street site Wilmam & Jackson			

Completion Information:

API	CMP_DT	SFUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF	O_AFT	O_BEF
4725130405	--	--	783	Spit Level			undesignated	undesignated	undesignated	unknown	unknown						

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

There is no Stratigraphy data for this well

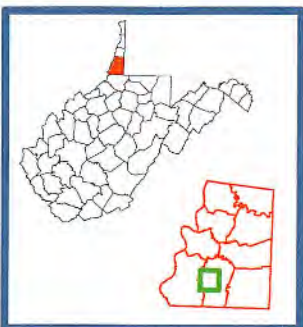
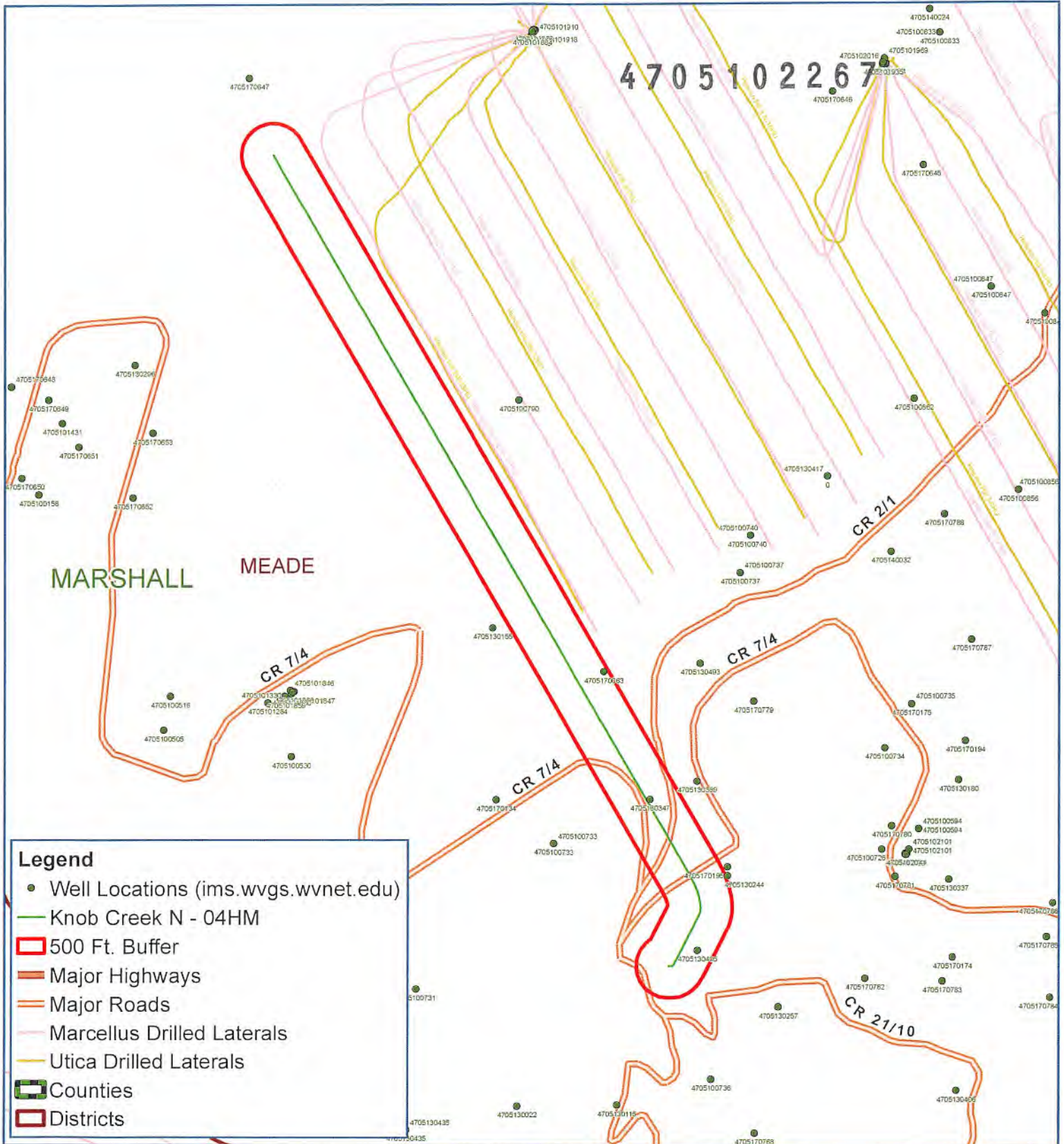
There is no Wireline (E-Log) data for this well

Plugging Information:

API	PLG_DT	DEPTH_PBT
4725130405	12/4/1949	0

There is no Sample data for this well

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Environmental Protection



Knob Creek N - 04HM Meade District Marshall County, WV



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

Map Created: August 14, 2018
Map Current As Of: August 14, 2019



4705102267

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Knob Creek N-4HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

Company Official Signature Jim Pancake

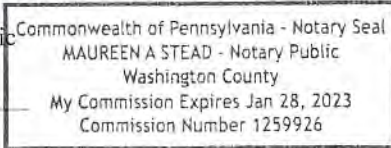
Company Official (Typed Name) Jim Pancake

Company Official Title VP Geosciences

Subscribed and sworn before me this 22 day of AUGUST, 20 19

Maureen A Stead Notary Public

My commission expires 1/29/23



4705102267

Form WW-9

Operator's Well No. Knob Creek N-4HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 12.93 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
Annual Ryegrass	40
Spring Oats	96

Seed Type	lbs/acre
Orchard Grass	12
Ladino	3
White Clover	2

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: [Blank lines for notes]

Title: WVDEP Oil and Gas Inspector

Date: 8/22/19

Field Reviewed? (X) Yes () No

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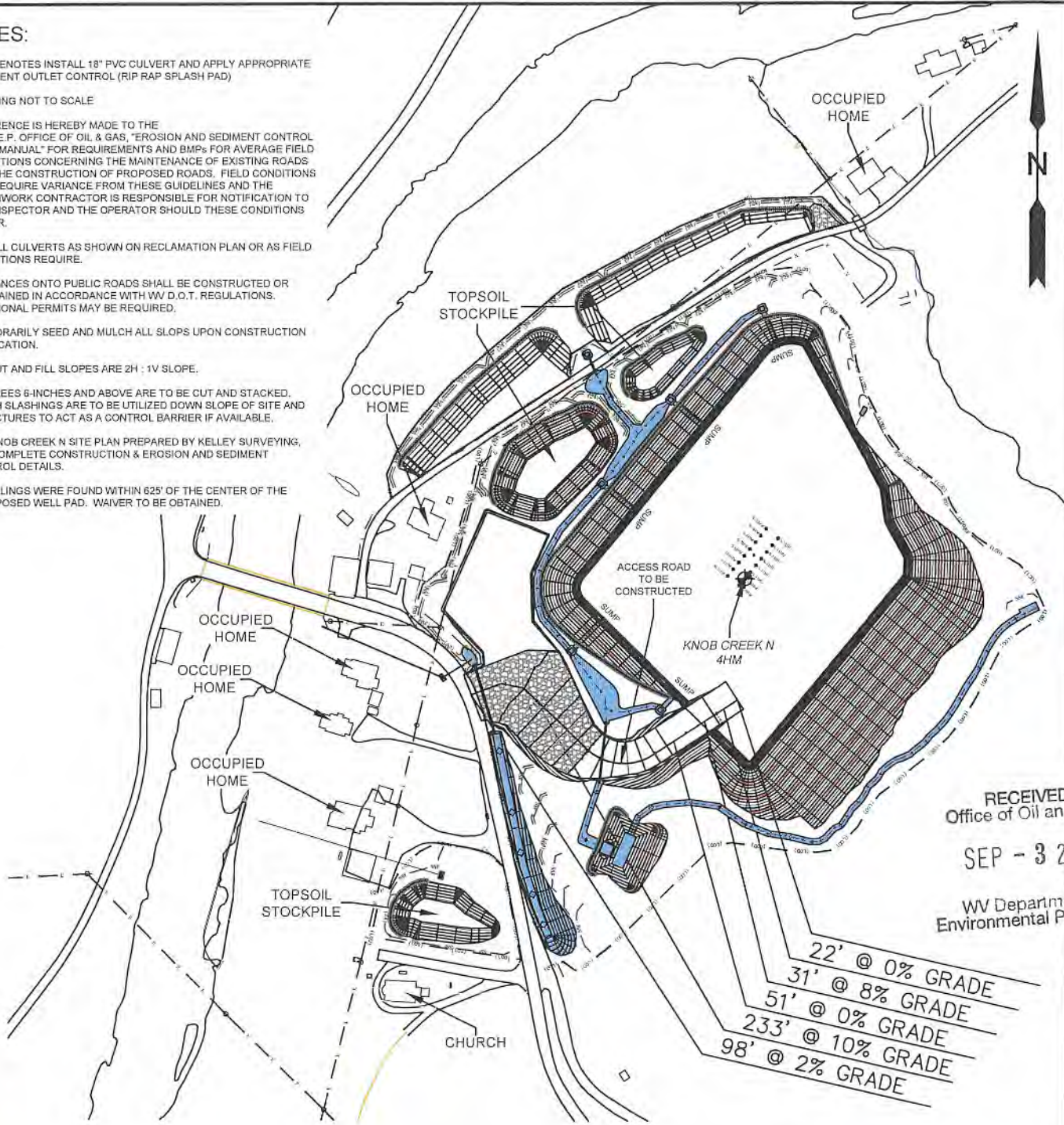
SEP - 3 2019

WV Department of Environmental Protection

PROPOSED KNOB CREEK N - 4HM

NOTES:

1. -- DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE KNOB CREEK N SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.
10. DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF THE PROPOSED WELL PAD. WAIVER TO BE OBTAINED.



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22' @ 0% GRADE
31' @ 8% GRADE
51' @ 0% GRADE
233' @ 10% GRADE
98' @ 2% GRADE

----- SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE.

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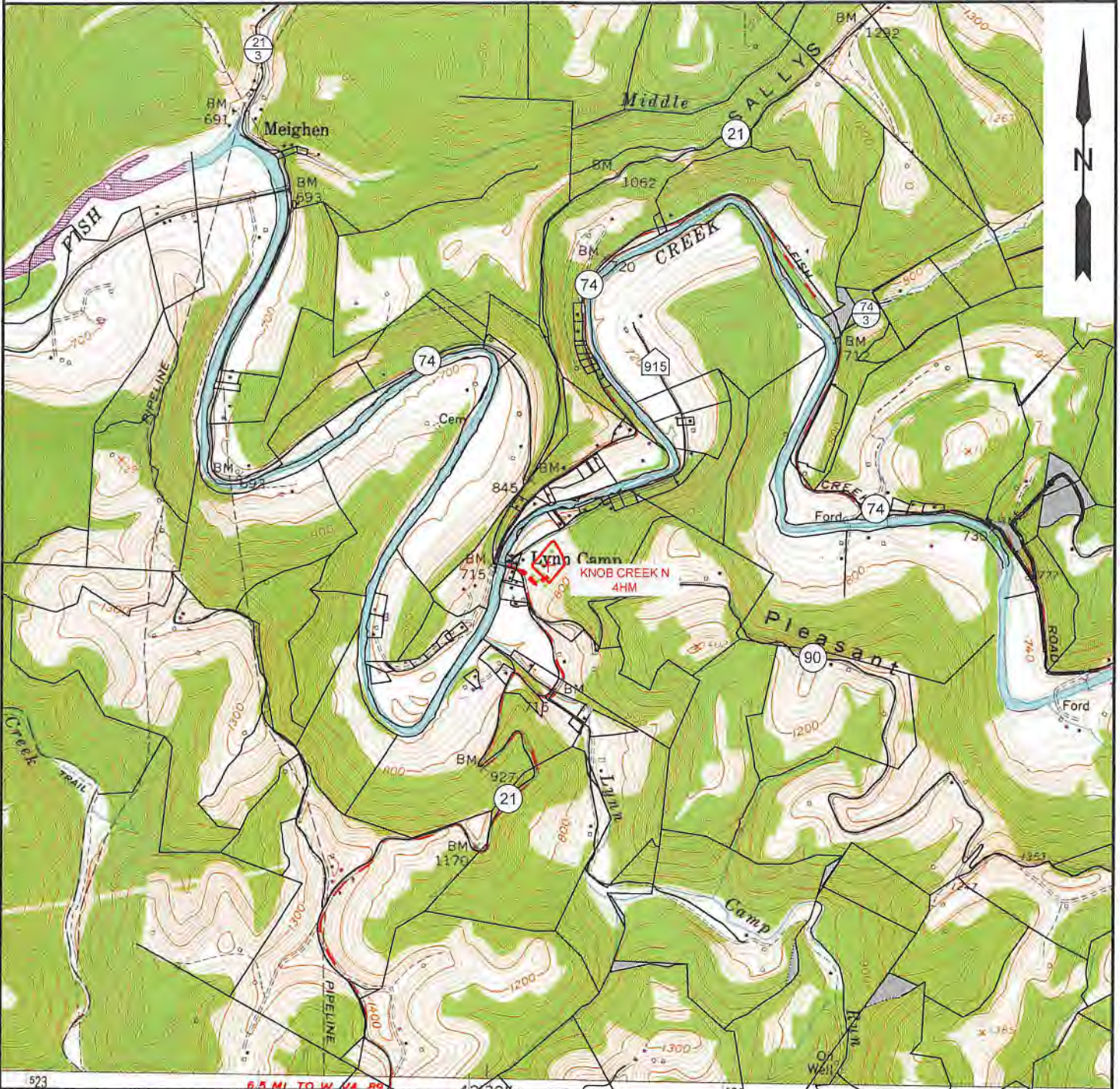
TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8789	08/20/2019	NONE

TUG HILL
OPERATING

WW-9

PROPOSED KNOB CREEK N - 4HM

4705102267
SUPPLEMENT PG. 2



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

LAT: 39.7137712
 LON: -80.8258327
 LOCATED: S 59°36'12" W AT 39,574.55' FROM THE CENTER OF KNOB CREEK N WELL PAD LOCATION.

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 www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8789	07/27/2018	1" - 2000'

TUG HILL
 OPERATING

4705102267



Well Site Safety Plan
Tug Hill Operating, LLC

ju
8/22/19

Well Name: Knob Creek N-4HM

Pad Location: Knob Creek Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,402,268.07

Easting: 525,222.67

August 2019

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Office of Oil and Gas

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WV Department of
Environmental Protection

**KNOB CREEK N LEASE
WELL 4HM
TUG HILL OPERATING**

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

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

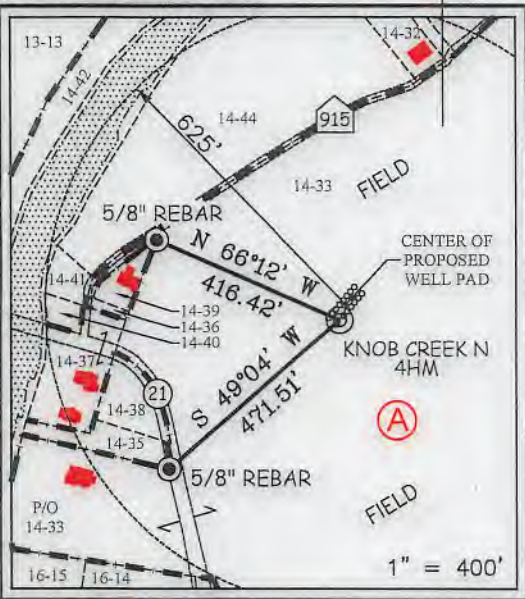
NAD'83 S.P.C.(FT)	N. 464,835.51	E. 1,629,662.35
NAD'83 GEO.	LAT-(N) 39.769970	LONG-(W) 80.705499
NAD'83 UTM (M)	N. 4,402,268.07	E. 525,222.67
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 466,248.2	E. 1,630,017.6
NAD'83 GEO.	LAT-(N) 39.773861	LONG-(W) 80.704303
NAD'83 UTM (M)	N. 4,402,700.3	E. 525,323.7
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 477,618.2	E. 1,623,654.4
NAD'83 GEO.	LAT-(N) 39.804836	LONG-(W) 80.727493
NAD'83 UTM (M)	N. 4,406,131.8	E. 523,327.2

T.H. LONGITUDE 80°40'00"
B.H. LONGITUDE 80°42'30"

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
9-10-8	BRENT ALLEN CONNER	2.00
9-10-10	RALPH MARTIN TAYLOR	2.23
9-10-14	WILLIAM MCCONNELL	15.00
9-11-1	GERALD F. PADLOW	1.033
9-11-2.1	KENNETH P. GATEWOOD, ET UX	0.308
9-11-2.2	GERALD F. PADLOW, ET UX	0.291
9-13-10	ARTHUR L. MOORE	3.96
9-13-13	MARGARET K. FOX - LIFE	15.513
9-14-1.2	KENNETH N. & TERESA A. SMERTNECK	1.02
9-14-11.3	PATRICK J. SCHELLHASE - TRUST	23.424
9-14-28	CHARLES R. SCHELLHASE, ET UX	3.029
9-14-29	ANDREW FASOULETOS, ET UX	0.209
9-14-29.1	ANDREW FASOULETOS, ET UX	1.171
9-14-30	WILLIAM C. GROFT, ET UX	0.55
9-14-32	TWILA C. COFFIELD	0.383
9-14-32.1	TWILA C. COFFIELD	0.184
9-14-35	PAUL G. FOX	0.338
9-14-36	MARGARET FOX - LIFE	1600 SQ. FT.
9-14-37	MARGARET FOX - LIFE	LOT

MAP/PARCEL	ADJOINING SURFACE OWNER LIST - CONTINUED	ACRES
9-14-38	MARGARET FOX - LIFE	0.631
9-14-39	MARGARET FOX - LIFE	8675 SQ. FT.
9-14-40	MARGARET FOX - LIFE	19,360 SQ. FT.
9-14-41	MARGARET FOX - LIFE	9165 SQ. FT.
9-14-42	JOHN C. LAGOS, ET UX	1.87
9-14-43	JAMES G. FOX	0.65
9-14-44	DAVID LEE FRANKLIN	2.913
9-14-45	GEORGE R. TAYLOR, ET UX	10.98
9-14-46.1	MARTHA JANE FAZZARO	1.512
9-14-47	MICHAEL L. & CHERYL J. ACREE	0.355
9-14-48	MICHAEL L. & CHERYL J. ACREE	0.473
9-14-49	MICHAEL L. & CHERYL J. ACREE	0.118
9-14-50	RONALD MARSH	0.707
9-14-52	JAMES E. PEELMAN	0.439
9-14-53	JAMES E. PEELMAN	0.555
9-14-54	RICHARD L. HARVETH, ET UX	1.649
9-16-14	LYNN CAMP METHODIST CHURCH	0.762
9-16-15	RONALD R. YOUNG, ET UX - LIFE	52.02
9-16-15.1	ERIC J. YOUNG	1.98

REFERENCES



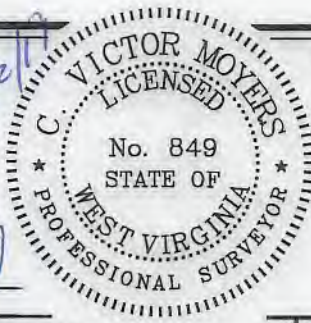
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NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- SEE REFERENCES FOR DWELLINGS LOCATED WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.

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

P.S. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JULY 27, 2018
REVISED AUGUST 20, 2019
OPERATORS WELL NO. KNOB CREEK N-4HM
API WELL NO. 47 - 051 - 02267
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8789P4HMR.dwg
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'
KNOB CREEK N-4HM REV2

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

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: GROUND = 734.20' ELEVATION PROPOSED = 734.67' WATERSHED FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER DAVID LEE FRANKLIN ACREAGE 65.824±
ROYALTY OWNER DAVID LEE FRANKLIN, ET AL - SEE WW-6A1 ACREAGE 65.824±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

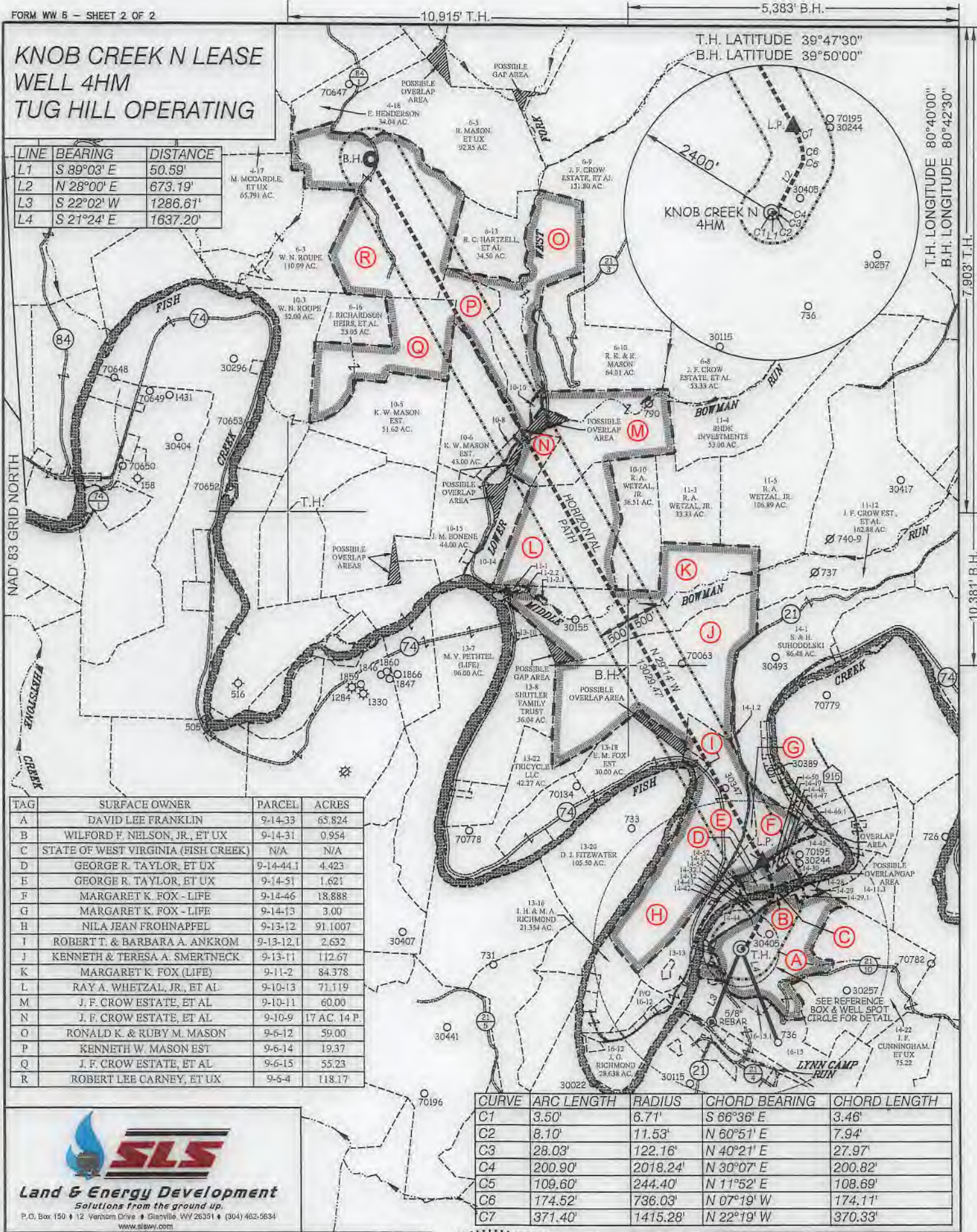
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,359' / TMD: 19,823'

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

COUNTY NAME
PERMIT

**KNOB CREEK N LEASE
WELL 4HM
TUG HILL OPERATING**

LINE	BEARING	DISTANCE
L1	S 89°03' E	50.59'
L2	N 28°00' E	673.19'
L3	S 22°02' W	1286.61'
L4	S 21°24' E	1637.20'



TAG	SURFACE OWNER	PARCEL	ACRES
A	DAVID LEE FRANKLIN	9-14-33	65.824
B	WILFORD F. NELSON, JR., ET UX	9-14-31	0.954
C	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
D	GEORGE R. TAYLOR, ET UX	9-14-44.1	4.423
E	GEORGE R. TAYLOR, ET UX	9-14-51	1.621
F	MARGARET K. FOX - LIFE	9-14-46	18,888
G	MARGARET K. FOX - LIFE	9-14-13	3.00
H	NILA JEAN FROHNAPPEL	9-13-12	91.1007
I	ROBERT T. & BARBARA A. ANKROM	9-13-12.1	2.632
J	KENNETH & TERESA A. SMERTNECK	9-13-11	112.67
K	MARGARET K. FOX (LIFE)	9-11-2	84.378
L	RAY A. WHETZAL, JR., ET AL	9-10-13	71.119
M	J. F. CROW ESTATE, ET AL	9-10-11	60.00
N	J. F. CROW ESTATE, ET AL	9-10-9	17 AC. 14 P.
O	RONALD K. & RUBY M. MASON	9-6-12	59.00
P	KENNETH W. MASON EST	9-6-14	19.37
Q	J. F. CROW ESTATE, ET AL	9-6-15	55.23
R	ROBERT LEE CARNEY, ET UX	9-5-4	118.17

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	3.50'	6.71'	S 66°36' E	3.46'
C2	8.10'	11.53'	N 60°51' E	7.94'
C3	28.03'	122.16'	N 40°21' E	27.97'
C4	200.90'	2018.24'	N 30°07' E	200.82'
C5	109.60'	244.40'	N 11°52' E	108.69'
C6	174.52'	736.03'	N 07°19' W	174.11'
C7	371.40'	1415.28'	N 22°19' W	370.33'

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(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 464,835.51	E. 1,629,662.35	
NAD'83 GEO.	LAT-(N) 39.769970	LONG-(W) 80.705499	
NAD'83 UTM (M)	N. 4,402,268.07	E. 525,222.67	
LANDING POINT			
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NAD'83 UTM (M)	N. 4,402,700.3	E. 525,323.7	
BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 477,618.2	E. 1,623,654.4	
NAD'83 GEO.	LAT-(N) 39.804836	LONG-(W) 80.727493	
NAD'83 UTM (M)	N. 4,406,131.8	E. 523,327.2	



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
P.S. 849 *C. Victor Moyers*

SCALE 1" = 2000' FILE NO. 8789P4HMR.dwg
KNOB CREEK N-4HM REV2
DATE JULY 27, 20 18
REVISED AUGUST 20, 20 19
OPERATORS WELL NO. KNOB CREEK N-4HM
API WELL NO. 47 - 051 - 02247
STATE COUNTY PERMIT

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

LEGEND

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

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

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. 4705102267
Knob Creek N-4HM

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

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

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

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

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment
10*47051.219.1	9-14-33	A	DAVID LEE FRANKLIN	TH EXPLORATION LLC	1/8+	937 385	N/A	N/A	N/A	N/A
10*47051.219.1	9-14-31	B	DAVID LEE FRANKLIN	TH EXPLORATION LLC	1/8+	937 385	N/A	N/A	N/A	N/A
10*23458	FISH CREEK - WV	C	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	TH EXPLORATION LLC	1/8+	1019 373	N/A	N/A	N/A	N/A
10*19565	9-14-44.1	D	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	947 566	N/A	N/A	N/A	N/A
10*47051.219.1	9-14-44.1	D	DAVID LEE FRANKLIN	TH EXPLORATION LLC	1/8+	937 385	N/A	N/A	N/A	N/A
10*47051.219.41	9-14-44.1	D	WILLIAM K STERN AND BETTY L STERN	TH EXPLORATION LLC	1/8+	894 485	N/A	N/A	N/A	N/A
10*19565	9-14-51	E	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	947 566	N/A	N/A	N/A	N/A
10*47051.219.1	9-14-51	E	DAVID LEE FRANKLIN	TH EXPLORATION LLC	1/8+	937 385	N/A	N/A	N/A	N/A
10*47051.219.41	9-14-51	E	WILLIAM K STERN AND BETTY L STERN	TH EXPLORATION LLC	1/8+	894 485	N/A	N/A	N/A	N/A
10*18298	9-14-46	F	MAUREEN GREGG	TH EXPLORATION LLC	1/8+	929 273	N/A	N/A	N/A	N/A
10*18300	9-14-46	F	ROBERT W ODOM AND CASSANDRA L ODOM	TH EXPLORATION LLC	1/8+	929 283	N/A	N/A	N/A	N/A
10*18805	9-14-46	F	CINDY STEVENS TOZIER	TH EXPLORATION LLC	1/8+	937 628	N/A	N/A	N/A	N/A
10*19689	9-14-46	F	EDMOND TURGEON JR AND CATHY STEVENS TURGEON	TH EXPLORATION LLC	1/8+	944 156	N/A	N/A	N/A	N/A
10*19937	9-14-46	F	JAMES D STEVENS AND DOROTHY M STEVENS	TH EXPLORATION LLC	1/8+	949 151	N/A	N/A	N/A	N/A
10*19938	9-14-46	F	JOHN H STEVENS AND LYNDA L STEVENS	TH EXPLORATION LLC	1/8+	949 144	N/A	N/A	N/A	N/A
10*47051.219.1	9-14-46	F	DAVID LEE FRANKLIN	TH EXPLORATION LLC	1/8+	937 385	N/A	N/A	N/A	N/A
10*47051.219.41	9-14-46	F	WILLIAM K STERN AND BETTY L STERN	TH EXPLORATION LLC	1/8+	894 485	N/A	N/A	N/A	N/A
10*47051.243.1	9-13-14	G	MARY A FOX	TH EXPLORATION LLC	1/8+	879 332	N/A	N/A	N/A	N/A
10*47051.243.2	9-13-14	G	PAUL G FOX	TH EXPLORATION LLC	1/8+	879 335	N/A	N/A	N/A	N/A
10*47051.243.3	9-13-14	G	MARK H FOX	TH EXPLORATION LLC	1/8+	879 338	N/A	N/A	N/A	N/A
10*47051.243.4	9-13-14	G	DAVID E FOX	TH EXPLORATION LLC	1/8+	876 55	N/A	N/A	N/A	N/A
10*47051.243.5	9-13-14	G	LOUIS T FOX AND KAREN A FOX	TH EXPLORATION LLC	1/8+	876 58	N/A	N/A	N/A	N/A
10*47051.243.6	9-13-14	G	THOMAS J FOX	TH EXPLORATION LLC	1/8+	876 61	N/A	N/A	N/A	N/A
10*24858	9-13-12	H	NILA JEAN FROHNAPFEL	TH EXPLORATION LLC	1/8+	1028 119	N/A	N/A	N/A	N/A
10*19942	9-13-12.1	I	ROBERT T ANKROM & BARBARA A ANKROM	TH EXPLORATION LLC	1/8+	949 207	N/A	N/A	N/A	N/A
10*18265	9-13-11	J	KENNETH NELSON SMERTNECK AND TERESA ANN SMERTNECK	TH EXPLORATION LLC	1/8+	933 103	N/A	N/A	N/A	N/A
10*47051.243.1	9-11-2	K	MARY A FOX	TH EXPLORATION LLC	1/8+	879 332	N/A	N/A	N/A	N/A
10*47051.243.2	9-11-2	K	PAUL G FOX	TH EXPLORATION LLC	1/8+	879 335	N/A	N/A	N/A	N/A
10*47051.243.3	9-11-2	K	MARK H FOX	TH EXPLORATION LLC	1/8+	879 338	N/A	N/A	N/A	N/A
10*47051.243.4	9-11-2	K	DAVID E FOX	TH EXPLORATION LLC	1/8+	876 55	N/A	N/A	N/A	N/A
10*47051.243.5	9-11-2	K	LOUIS T FOX AND KAREN A FOX	TH EXPLORATION LLC	1/8+	876 58	N/A	N/A	N/A	N/A
10*47051.243.6	9-11-2	K	THOMAS J FOX	TH EXPLORATION LLC	1/8+	876 61	N/A	N/A	N/A	N/A
10*15567	9-10-13	L	VICKIE MASON	CHESAPEAKE APPALACHIA LLC	1/8+	680 409	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/6	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148

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10*15568	9-10-13	L	MARY A SOUTH	CHESAPEAKE APPALACHIA LLC	1/8+	681 410	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/463	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15569	9-10-13	L	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 560	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/463	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15570	9-10-13	L	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	682 584	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/463	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15571	9-10-13	L	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 568	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/463	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15572	9-10-13	L	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 500	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/463	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/427	Chesapeake Appalachia LLC to Chevron USA Inc: 30/461	Chevron USA Inc to TH Exploration LLC: 36/148
10*15724	9-10-13	L	JAMES RODNEY BRIGGS	TH EXPLORATION LLC	1/8+	901 325	N/A	N/A	N/A	N/A
10*15725	9-10-13	L	ROGER JACOB BRIGGS	TH EXPLORATION LLC	1/8+	901 318	N/A	N/A	N/A	N/A
10*15726	9-10-13	L	JOHN DEAN BRIGGS AND PATTY KAY BRIGGS	TH EXPLORATION LLC	1/8+	901 321	N/A	N/A	N/A	N/A
10*16079	9-10-13	L	LORI ASTON DIXON	TH EXPLORATION LLC	1/8+	904 565	N/A	N/A	N/A	N/A
10*16236	9-10-13	L	FRANCIS Y RIGGLE	TH EXPLORATION LLC	1/8+	907 156	N/A	N/A	N/A	N/A
10*16237	9-10-13	L	GREGORY J ASTON AND TAMMY E ASTON	TH EXPLORATION LLC	1/8+	907 149	N/A	N/A	N/A	N/A
10*16275	9-10-13	L	JEFFREY A ASTON	TH EXPLORATION LLC	1/8+	907 153	N/A	N/A	N/A	N/A
10*21206	9-10-13	L	MICHAEL BAUM	TH EXPLORATION LLC	1/8+	952 164	N/A	N/A	N/A	N/A
10*47051.108.1	9-10-13	L	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A	N/A
10*47051.108.29	9-10-13	L	PATRICIA ANN MCDUGAL	TH EXPLORATION LLC	1/8+	901 306	N/A	N/A	N/A	N/A
10*47051.108.30	9-10-13	L	STEVEN L ASTON	TH EXPLORATION LLC	1/8+	901 308	N/A	N/A	N/A	N/A
10*47051.108.31	9-10-13	L	FRED T KERNS	TH EXPLORATION LLC	1/8+	901 298	N/A	N/A	N/A	N/A
10*47051.108.36	9-10-13	L	YVONNE K BOGERT	TH EXPLORATION LLC	1/8+	901 300	N/A	N/A	N/A	N/A
10*47051.108.37	9-10-13	L	CARL E ASTON	TH EXPLORATION LLC	1/8+	901 304	N/A	N/A	N/A	N/A
10*47051.108.38	9-10-13	L	CAROLYN SUE WELLS	TH EXPLORATION LLC	1/8+	901 310	N/A	N/A	N/A	N/A
10*47051.108.41	9-10-13	L	ELMER ASTON	TH EXPLORATION LLC	1/8+	901 296	N/A	N/A	N/A	N/A
10*47051.108.48	9-10-13	L	WILLIAM ASTON	TH EXPLORATION LLC	1/8+	901 312	N/A	N/A	N/A	N/A

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10*47051.108.5	9-10-13	L	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885	55	N/A	N/A	N/A	N/A
10*47051.108.50	9-10-13	L	DAVID U ASTON ESTATE BY EXECUTOR DAWN R MARKS	TH EXPLORATION LLC	1/8+	901	314	N/A	N/A	N/A	N/A
10*47051.108.52	9-10-13	L	CONNIE N ASTON	TH EXPLORATION LLC	1/8+	901	316	N/A	N/A	N/A	N/A
10*47051.108.53	9-10-13	L	MARY JANE KYLE	TH EXPLORATION LLC	1/8+	901	339	N/A	N/A	N/A	N/A
10*47051.108.56	9-10-13	L	PAULA HUNDL	TH EXPLORATION LLC	1/8+	901	347	N/A	N/A	N/A	N/A
10*47051.108.57	9-10-13	L	ROBERT B KERNS	TH EXPLORATION LLC	1/8+	901	349	N/A	N/A	RECEIVED	N/A
10*47051.108.58	9-10-13	L	RONALD W KERNS	TH EXPLORATION LLC	1/8+	901	341	N/A	N/A	Office of Oil and Gas	N/A
10*47051.108.59	9-10-13	L	PAUL ULYSSES KERNS ESTATE SALVATORE P PUGLISI, EXECUTOR	TH EXPLORATION LLC	1/8+	901	343	N/A	N/A	OCT 8 2019	N/A
10*47051.108.6	9-10-13	L	TERRI MCCARDLE	TH EXPLORATION LLC	1/8+	895	23	N/A	N/A	N/A	N/A
10*47051.108.61	9-10-13	L	AMANDA FEIGH	TH EXPLORATION LLC	1/8+	901	345	N/A	N/A	WV Department of Environmental Protection	N/A
10*47051.108.7	9-10-13	L	GARY FRANCIS WHETZAL	TH EXPLORATION LLC	1/8+	895	26	N/A	N/A	N/A	N/A
10*47051.108.73	9-10-13	L	JOHN ASTON JR	TH EXPLORATION LLC	1/8+	901	351	N/A	N/A	N/A	N/A
10*47051.108.77	9-10-13	L	SHONDA WOOD	TH EXPLORATION LLC	1/8+	901	356	N/A	N/A	N/A	N/A
10*47051.108.78	9-10-13	L	DONNA WOODS MOODY	TH EXPLORATION LLC	1/8+	901	354	N/A	N/A	N/A	N/A
10*47051.108.79	9-10-13	L	MARK A ASTON	TH EXPLORATION LLC	1/8+	901	358	N/A	N/A	N/A	N/A
10*15510	9-10-11	M	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS, LLC	0.18	718	326	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15511	9-10-11	M	DAVID E CROW	TRIENERGY HOLDINGS, LLC	0.18	718	376	TriEnergy Holdings LLC to NPAR LLC: 25/463	NPAR LLC to Chevron USA Inc: 26/269	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 36/148
10*15512	9-10-11	M	FRANCES COFFEY	TRIENERGY HOLDINGS, LLC	0.18	718	378	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15513	9-10-11	M	KAY KEYES	TRIENERGY HOLDINGS, LLC	1/8+	718	330	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15514	9-10-11	M	L PAUL CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	336	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15515	9-10-11	M	DESIRE L CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	334	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148

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10*15516	9-10-11	M	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS, LLC	1/8+	718	354	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15517	9-10-11	M	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS, LLC	1/8+	718	345	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15518	9-10-11	M	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS, LLC	1/8+	718	347	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15519	9-10-11	M	JOHN CROW	TRIENERGY HOLDINGS, LLC	1/8+	726	580	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*15520	9-10-11	M	TIMOTHY CROW	TRIENERGY HOLDINGS, LLC	1/8+	726	582	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*47051.123.1	9-10-11	M	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865	389	N/A	N/A	N/A	N/A
10*15510	9-10-9	N	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS, LLC	1/8+	718	326	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15511	9-10-9	N	DAVID E CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	376	TriEnergy Holdings LLC to NPAR LLC: 25/463	NPAR LLC to Chevron USA Inc: 26/269	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 36/148
10*15512	9-10-9	N	FRANCES COFFEY	TRIENERGY HOLDINGS, LLC	1/8+	718	378	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15513	9-10-9	N	KAY KEYES	TRIENERGY HOLDINGS, LLC	1/8+	718	330	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15514	9-10-9	N	L PAUL CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	336	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148

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10*15515	9-10-9	N	DESIRE L CROW	TRIENERGY HOLDINGS, LLC	1/8+	718 334	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15516	9-10-9	N	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS, LLC	1/8+	718 354	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15517	9-10-9	N	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS, LLC	1/8+	718 345	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15518	9-10-9	N	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS, LLC	1/8+	718 347	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15519	9-10-9	N	JOHN CROW	TRIENERGY HOLDINGS, LLC	1/8+	726 580	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*15520	9-10-9	N	TIMOTHY CROW	TRIENERGY HOLDINGS, LLC	1/8+	726 582	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*47051.123.1	9-10-9	N	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A	N/A
10*15525	9-6-12	O	RONALD KEITH MASON ET UX	CHEVRON U.S.A. INC.	1/8+	772 445	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15541	9-6-12	O	MARY RUTH FROHNAPFEL	CHEVRON U.S.A. INC.	1/8+	781 312	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15542	9-6-12	O	KENNETH D SIBURT	CHEVRON U.S.A. INC.	1/8+	781 218	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15543	9-6-12	O	SANDRA FROWEN	CHEVRON U.S.A. INC.	1/8+	781 307	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15544	9-6-12	O	VICKI J CHERRY AND RICKEY E CHERRY	CHEVRON U.S.A. INC.	1/8+	793 318	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148

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Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment
10*15545	9-6-12	O	JAMES B SIBURT AND DELILA D SIBURT	CHEVRON U.S.A. INC.	1/8+	793	332	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15546	9-6-12	O	ALAN K SIBURT ET UX	CHEVRON U.S.A. INC.	1/8+	793	325	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15547	9-6-12	O	RODNEY L SIBURT	CHEVRON U.S.A. INC.	1/8+	793	346	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 36/148
10*15504	9-6-14	P	JAMES MASON ET AL	AB RESOURCES	1/8+	692	461	AB Resources LLC & NPAR LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/490	Chief Exploration & Development LLC, Chief O&G LLC, Radler 2000 LP & Enerplus Resources Corp to Chevron USA Inc: 25/1	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration LLC: 36/148
10*15510	9-6-15	Q	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS, LLC	1/8+	718	326	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15511	9-6-15	Q	DAVID E CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	376	TriEnergy Holdings LLC to NPAR LLC: 25/463	NPAR LLC to Chevron USA Inc: 26/269	TriEnergy Holdings LLC & TriEnergy Inc to Chevron USA Inc: 28/356	Chevron USA Inc to TH Exploration LLC: 36/148
10*15512	9-6-15	Q	FRANCES COFFEY	TRIENERGY HOLDINGS, LLC	1/8+	718	378	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15513	9-6-15	Q	KAY KEYES	TRIENERGY HOLDINGS, LLC	1/8+	718	330	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15514	9-6-15	Q	L PAUL CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	336	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15515	9-6-15	Q	DESIRE L CROW	TRIENERGY HOLDINGS, LLC	1/8+	718	334	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148

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Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment
10*15516	9-6-15	Q	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS, LLC	1/8+	718	354	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15517	9-6-15	Q	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS, LLC	1/8+	718	345	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15518	9-6-15	Q	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS, LLC	1/8+	718	347	TriEnergy Holdings LLC to NPAR LLC: 24/430	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: 36/148
10*15519	9-6-15	Q	JOHN CROW	TRIENERGY HOLDINGS, LLC	1/8+	726	580	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*15520	9-6-15	Q	TIMOTHY CROW	TRIENERGY HOLDINGS, LLC	1/8+	726	582	TriEnergy Holdings LLC to NPAR LLC: 25/449	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: 36/148
10*47051.123.1	9-6-15	Q	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865	389	N/A	N/A	N/A	N/A
10*19116	9-6-4	R	ROBERT LEE CARNEY AND BONNIE ANNE CARNEY	CHESAPEAKE APPALACHIA LLC	1/8+	682	255	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 22/671	Chesapeake Appalachia LLC to Chevron USA Inc: 30/392	Statoil USA Onshore Properties Inc to Chevron USA Inc: 30/404	Chevron USA Inc to TH Exploration LLC: 40/127

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August 29, 2019

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

RE: Knob Creek N-4HM

Subject: Marshall County Route 74 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 74 in the area reflected on the Knob Creek N-4HM 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-hillop.com.

Sincerely,

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

Amy L. Miller
Permitting Specialist - Appalachia

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

Date of Notice Certification: 08/29/2019

API No. 47- 051 -

Operator's Well No. Knob Creek N-4HM

Well Pad Name: Knob Creek

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>525,222.67</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,268.07</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - CR 21</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>David Lee Franklin</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><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 align="center">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p align="center">RECEIVED Office of Oil and Gas SEP - 3 2019</p> <p align="center">WV Department of Environmental Protection</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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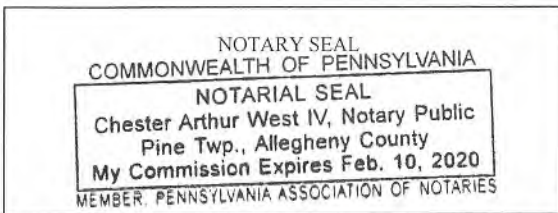
Required Attachments:

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

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:	Amy L. Miller <u><i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia</u>	Facsimile:	<u>724-749-8388</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hillop.com</u>



Subscribed and sworn before me this 29th day of August 2019.

[Signature] Notary Public

My Commission Expires 2-10-2020

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 8/27/2019 **Date Permit Application Filed:** 8/27/2019

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: David Lee Franklin
Address: 131 Saint Joseph Road
Glen Easton, WV 26039

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: David Lee Franklin
Address: 131 Saint Joseph Road
Glen Easton, WV 26039

Name: _____
Address: _____

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

COAL OWNER OR LESSEE
Name: CNX Land Resources, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15318

COAL OPERATOR
Name: _____
Address: _____

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

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

*Please attach additional forms if necessary

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API NO. 47- _____ - _____
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

Notice is hereby given:

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

This Notice Shall Include:

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

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

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

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

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

Well Location Restrictions

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

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API NO. 47-_____-_____
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

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(8-13)

API NO. 47- _____ -
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

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)

4705102267
API NO. 47-
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

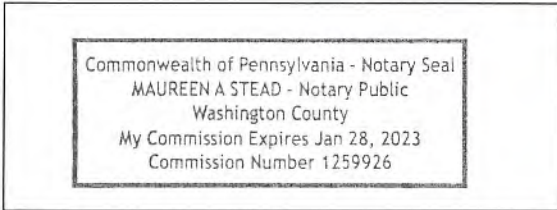
Notice is hereby given by:

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

Address: 380 Southpointe 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 20 day of AUG., 2019.
Maureen A Stead Notary Public
My Commission Expires 1/28/23

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SEP - 3 019

WV Department of
Environmental Protection

PROPOSED
KNOB CREEK N - 4HM

4705102267



NOTE: THERE APPEARS TO BE TWENTY-SIX (26) POSSIBLE WATER SOURCES WITHIN 2,000'. Office of Oil and Gas

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

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		07/27/2018	1" = 1000'

WV Department of
Environmental Protection
TUG HILL
OPERATING

Exhibit WW-6A

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

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

Well: KNOB CREEK N – 4HM
District: Meade (House #'s 1-12, 14-26) (Church #13)
State: WV

There are twenty-six (25) residences, no businesses, one (1) church, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

<p>House 1 TM 14 Pcl. 39 Margaret K. Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) Physical Address: 31 Crow Dr. Glen Easton, WV 26039 Tax Address: 5761 Saint Joseph Rd. Proctor, WV 26055</p>	<p>House 2 TM 14 Pcl. 32 Twila C. Coffield Phone: 304-845-5941 Physical Address: 184 Crow Dr. Glen Easton, WV 26039 Tax Address: 16 Sandy Ave. Moundsville, WV 26041-1020</p>	<p>House 3 TM 14 Pcl. 54 Richard L. Harveth, Et Ux c/o Richard Lee Harveth Phone: 304-845-7397; 304-845-5128 Physical Address: 220 Crow Dr. Glen Easton, WV 26039 Tax Address: Same</p>
<p>House 4 TM 14 Pcl. 42 John C. Lagos, Et Ux Phone: 304-845-2793 Physical Address: 12529 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 404 Jefferson Ave. Glen Dale, WV 26038</p>	<p>House 5 TM 14 Pcl. 53 James E. Peelman Phone: None Found Physical Address: 12551 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 12551 Fish Creek Rd. Glen Easton, WV 26039</p>	<p>House 6 TM 14 Pcl. 29.1 Andrew Fasouletos, Et Ux Phone: 304-845-9009 Physical Address: 329 Crow Dr. Glen Easton, WV 26039 Tax Address: 1. Rd. 2 Box 150 Proctor, WV 26055 2. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723</p>
<p>House 7 TM 14 Pcl. 29.1 Andrew Fasouletos, Et Ux Phone: 304-845-9009 Physical Address: 361 Crow Dr. Glen Easton, WV 26039 Tax Address: 1. Rd. 2 Box 150 Proctor, WV 26055 2. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723</p>	<p>House 8 TM 14 Pcl. 29 Andrew Fasouletos, Et Ux c/o Tena Marie Stricklin Phone: 304-845-9009 Physical Address: 389 Crow Dr. Glen Easton, WV 26039 Tax Address: 1. 3391 Taylors Ridge Rd. Proctor, WV 26055-9723 2. Rd. 2 Box 150 Proctor, WV 26055</p>	<p>House 9 TM 14 Pcl. 48 Michael L. & Cheryl J. Acree Phone: 304-455-2148; 304-455-5859 Physical Address: 12725 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 189 Plum St. Proctor, WV 26055</p>

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Environmental Protection

<p>House 10 TM 14 Pcl. 45 George R. Taylor, Et Ux Phone: 304-845-2987 Physical Address: 12781 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 11 TM 16 Pcl. 15.1 Eric J. Young Phone: 304-686-3398; 304-905-1986 (Per Address – Chelsey Long); 304-845-0154 (Per Address – Bill J. Blatt) Physical Address: 153 Young Ln. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 12 TM 16 Pcl. 15 Ronald R. Young, Et Ux - Life Phone: 304-845-6044 (Per Tax Address – Geraldine M. Young) Physical Address: 348 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: Same</p>
<p>House 13 TM 16 Pcl. 14 Lynn Camp Methodist Church Phone: Physical Address: 171 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: Unknown Address Moundsville, WV 26041</p>	<p>House 14 TM 16 Pcl. 15 Ronald R. Young, Et Ux - Life Phone: 304-845-6044 (Per Tax Address – Geraldine M. Young) Physical Address: 323 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 348 Saint Joseph Rd. Glen Easton, WV 26039</p>	<p>House 15 TM 16 Pcl. 13.5 Paul R. Blake & Paul R. Blake II Phone: 304-845-9369 Physical Address: 616 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 121 Vandivere Ln. Glen Easton, WV 26039-9707</p>
<p>House 16 TM 16 Pcl. 13.1 Paul W. Blake - Life Phone: 304-845-2999 Physical Address: 581 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 1500 8th St. Moundsville, WV 26041-2031</p>	<p>House 17 TM 16 Pcl. 13.6 Wesley D. Yeater, Et Ux Phone: 304-843-5212 Physical Address: 37 Vandivere Ln. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 18 TM 16 Pcl. 13.3 Paul R. Blake Phone: 304-845-9369 Physical Address: 121 Vandivere Ln. Glen Easton, WV 26039 Tax Address: Same</p>
<p>House 19 TM 16 Pcl. 12.2 Spencer J. & Carrie A. Richmond Phone: 304-845-2274; 304-845-8186 Physical Address: 293 Richmond Ln. Glen Easton, WV 26039 Tax Address: 243 Richmond Ln. Glen Easton, WV 26039</p>	<p>House 20 TM 16 Pcl. 12.7 Spencer J. & Carrie A. Richmond Phone: 304-845-2274; 304-845-8186 Physical Address: 243 Richmond Ln. Glen Easton, WV 26039 Tax Address: Same</p>	<p>House 21 TM 16 Pcl. 12.1 James G. Richmond, Et Ux Phone: 304-845-8186 Physical Address: 157 Richmond Ln. Glen Easton, WV 26039 Tax Address: Same</p>
<p>House 22 TM 14 Pcl. 33 David Lee Franklin Phone: 304-845-6025; 304-845-3203 Physical Address: 131 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 131 Saint Joseph Rd. Glen Easton, WV 26039</p>	<p>House 23 TM 14 Pcl. 37 Margaret K. Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) Physical Address: 107 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 5761 Saint Joseph Rd. Proctor, WV 26055</p>	<p>House 24 TM 14 Pcl. 37 Margaret K. Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) Physical Address: 51 Saint Joseph Rd. Glen Easton, WV 26039 Tax Address: 5761 Saint Joseph Rd. Proctor, WV 26055</p>

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<p>House 25 TM 13 Pcl. 13 Margaret K. Fox – Life c/o Paul Fox Phone: 304-455-3817 (Per Tax Address – Paul G. Fox) Physical Address: 28 Richmond Ln. Glen Easton, WV 26039 Tax Address: 5761 Saint Joseph Rd. Proctor, WV 26055</p>	<p>House 26 TM 13 Pcl. 12 Nila Jean Prohnapfel Phone: None Found Physical Address: 11975 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: Rd. 1 Box 190 Proctor, WV 26055-9703</p>	
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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: 2/5/2018 **Date of Planned Entry:** 2/12/2018

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

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

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

Notice is hereby provided to:

SURFACE OWNER(s)

Name: David Lee Franklin (Pad and Access Road)
Address: 131 Saint Joseph Road
Glen Easton, WV 26039

Name: _____
Address: _____

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: CNX Land Resources, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15318

MINERAL OWNER(s)

Name: David Lee Franklin
Address: 131 Saint Joseph Road
Glen Easton, WV 26039

*please attach additional forms if necessary

Notice is hereby given:

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

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

Approx. Latitude & Longitude: 39.7700596; -80.7054579
Public Road Access: St. Joseph Road - County Route 21
Watershed: Fish Creek (HUC 10)
Generally used farm name: David Lee Franklin

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.

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Notice is hereby given by:

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

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

WV Department of
Environmental Protection

Oil and Gas Privacy Notice:

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

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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: 08/23/2019 **Date Permit Application Filed:** 08/27/2019

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: David Lee Franklin Name: _____
Address: 131 Saint Joseph Road Address: _____
Glen Easton, WV 26039 _____

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>525,222.67</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,268.07</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - CR 21</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>David Lee Franklin</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, LLC
Telephone: 724-749-8388
Email: amiller@tug-hilop.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

LIMITED POWER OF ATTORNEY

That I, Louis T. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said Louis T. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Louis T. Fox 3-24-18 (SEAL)

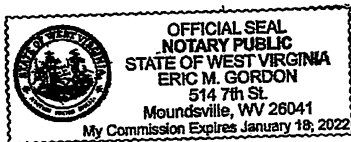
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by Louis T. Fox.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



Notary Public for the aforesaid County and/or State

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

T:\MSAston\Limited Power of Attorney\EMG.Limited.POA.wpd

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WV Department of
Environmental Protection

4705102267

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANDONSBURG PA 15317-5841

API NO. 47- _____
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

WW-6RW
BOOK 1059 PAGE 208

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

WAIVER

I, Linda T. Flea, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

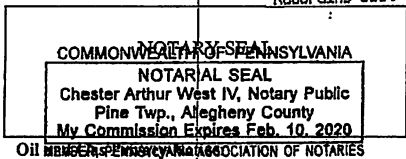
State: West Virginia UTM NAD 83 Easting: 525,222.67
County: Marshall UTM NAD 83 Northing: 4,402,268.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

<p>WELL SITE RESTRICTIONS BEING WAIVED *Please check all that apply</p> <p><input type="checkbox"/> EXISTING WATER WELLS <u>Marshall County</u></p> <p><input type="checkbox"/> DEVELOPED SPRINGS <u>Jan Pest, Clerk</u> <u>Instrument 1458167</u></p> <p><input checked="" type="checkbox"/> DWELLINGS <u>08/27/2019 @ 02:03:01 PM</u></p> <p><input type="checkbox"/> AGRICULTURAL BUILDINGS</p>	<p>FOR EXECUTION BY A NATURAL PERSON Signature: _____ Print Name: _____ Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC. Company: <u>TH Exploration, LLC</u> By: <u>Douglas L. DeMartino</u> Its: <u>Attorney-in-Fact</u> Signature: <u>[Signature]</u> Date: <u>8/23/2019</u></p>
---	---

Well Operator: Tug Hill Operating, LLC
By: David G. Delallo
Its: Land Team Lead
OIL & GAS LEASE
Book 1059 @ Page 208
Pages Recorded 1
Recording Cost \$ 11.00

Signature: [Signature]
Telephone: 724-748-8388



Subscribed and sworn before me this 23rd day of August 2019
[Signature] Notary Public
My Commission Expires 2-10-2020

NOTICE OF SEVERAL RIGHTS
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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 23rd day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 2:03 o'clock P. M.

TESTE: [Signature] Clerk

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Office of Oil and Gas

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WV Department of
Environmental Protection

4705102267

WW-6RW
(1-12)

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANDONSBURG PA 15317-5841

APL NO. 47-
OPERATOR WELL NO. 226
Knob Creek N-4HM
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Top Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

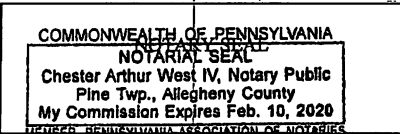
WAIVER

I, Douglas L. DeMartino, Esq., hereby state that I have read the instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,222.67
County: Marshall UTM NAD 83 Northing: 4,402,268.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

<p>WELL SITE RESTRICTIONS BEING WAIVED *Please check all that apply</p> <p><input type="checkbox"/> EXISTING WATER WELLS</p> <p><input type="checkbox"/> DEVELOPED SPRINGS</p> <p><input checked="" type="checkbox"/> DWELLINGS</p> <p><input type="checkbox"/> AGRICULTURAL BUILDINGS</p>	<p>Marshall County Jan Pest, Clerk Instrument 1458186 08/27/2019 @ 03:59:59 PM</p> <p>DIL & GAS LEASE Book 1059 @ Page 223 Pages Recorded 1 Recording Cost \$ 11.00</p>	<p>FOR EXECUTION BY A NATURAL PERSON Signature: _____ Print Name: _____ Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC. Company: <u>TH Exploration, LLC</u> By: <u>Douglas L. DeMartino, Esq.</u> Its: <u>Attorney-in-Fact</u> Signature: <u>[Signature]</u> Date: <u>8/23/2019</u></p> <p>Signature: <u>[Signature]</u> Telephone: <u>724-749-8388</u></p>
---	---	---



Subscribed and sworn before me this 26th day of August, 2019

Notary Public

My Commission Expires 2-10-2020

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

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 26th day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 3:59 o'clock P M.

TESTE: [Signature] Clerk

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

LIMITED POWER OF ATTORNEY

That I, David E. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said David E. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

David E. Fox (SEAL)

STATE OF West Virginia :

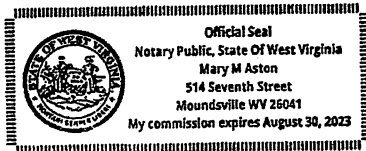
County of Marshall , to-wit:

The foregoing instrument was acknowledged before me this 27 day of March, 2018, by David E. Fox.

Given under my hand this 27 day of March, 2018.

My commission expires: August 30, 2023.

(NOTARY SEAL/STAMP REQUIRED)



Mary M Aston
Notary Public for the aforesaid
County and/or State

RECEIVED
Office of Oil and Gas
SEP - 3 2019

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

4705102267

WW-6A
(1-12) 1059 PAGE 0206

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANDLERBURG PA 15317-5841

API NO. 47- _____
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

WAIVER

I, David G. Pest by my Attorney-in-Fact TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,222.87
County: Marshall UTM NAD 83 Northing: 4,402,288.07
District: Meads Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

WELL SITE RESTRICTIONS BEING WAIVED

- *Please check all that apply
- EXISTING WATER WELLS Marshall County
- DEVELOPED SPRINGS Jan Pest, Clerk
- DWELLINGS Instrument 1458165
08/27/2019 @ 02:02:59 PM
- AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

Signature: _____
Print Name: _____
Date: _____
FOR EXECUTION BY A CORPORATION, ETC.
Company: TH Exploration, LLC
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: Douglas L. DeMartino
Date: 8/27/2019

Well Operator: Tug Hill Operating, LLC Oil & Gas Lease
By: David G. Delallo Book 1059 @ Page 206
Its: Land Team Lead Pages Recorded 1
Recording Cost \$ 11.00

Signature: _____
Telephone: 724-749-8388

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

Subscribed and sworn before me this 23rd day of August 2019
[Signature] Notary Public
My Commission Expires 2-10-2020

MEMBER - PENNSYLVANIA ASSOCIATION OF NOTARIES
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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

RECEIVED
Office of Oil and Gas
SEP - 3 2019
WV Department of
Environmental Protection

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 23rd day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 2:02 o'clock P. M.

TESTE: [Signature] Clerk

4705102267

LIMITED POWER OF ATTORNEY

That I, MARK H. FOX, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said MARK H. FOX hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Mark H. Fox 3-24-18 (SEAL)

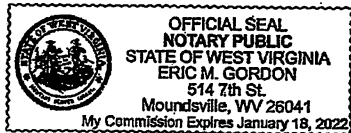
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by MARK H. FOX.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



Notary Public for the aforesaid
County and/or State

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

T:\MSAston\Limited Power of Attorney\EMG.Limited.POA.wpd

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

4705102267

WW-6RW
(1-12)

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANONSBURG PA 15317-5841

BOOK 10549 - PAGE 205
OPERATOR WELL NO. Knob Creek N-4HM
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

WAIVER

I, Mark H. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,222.67
County: Marshall UTM NAD 83 Northing: 4,402,268.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.6' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

WELL SITE RESTRICTIONS BEING WAIVED

*Please check all that apply

- EXISTING WATER WELLS Marshall County
- DEVELOPED SPRINGS Jan Pest, Clerk
- DWELLINGS Instrument 1458164
- AGRICULTURAL BUILDINGS 08/27/2019 @ 02:02:58 PM

FOR EXECUTION BY A NATURAL PERSON

Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC as Attorney-in-Fact for Mark H. Fox
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: [Signature]
Date: 8/23/2019

Well Operator: Tug Hill Operating, LLC Book 1059 @ Page 205
By: David G. Delallo Pages Recorded 1
Its: Land Team Lead Recording Cost \$ 11.00

Signature: [Signature]
Telephone: 724-749-8388

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

Subscribed and sworn before me this 23rd day of August 2019

[Signature] Notary Public

My Commission Expires 2-10-2020

ASSOCIATION OF NOTARIES
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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

RECEIVED
Office of Oil and Gas
SEP - 3 2019
WV Department of
Environmental Protection

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 23rd day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 2:02 o'clock P. M.

TESTE: [Signature] Clerk

LIMITED POWER OF ATTORNEY

That I, Thomas John Fox, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said Thomas John Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Thomas John Fox (SEAL)

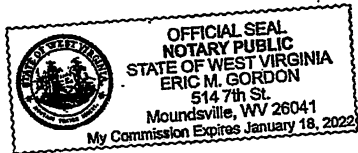
STATE OF West Virginia:
County of Marshall, to-wit:

The foregoing instrument was acknowledged before me this 31st day of March, 2018, by Thomas John Fox.

Given under my hand this 31st day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



[Signature]
Notary Public for the aforesaid
County and/or State

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

WW-6RW
(1-12)

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANDONSBURG PA 15317-5841

APP NO. 17-0-PAD 0-20-8
OPERATOR WELL NO. 0-Knob Creek N-4HM
Well Pad Name: Knob Creek

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

WAIVER

I, Thomas John Fox, by my Attorney-In-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 525,222.67
County: Marshall UTM NAD 83 Northing: 4,402,288.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5 Generally used farm name: David Lee Franklin
Watershed: Flash Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

WELL SITE RESTRICTIONS BEING WAIVED

*Please check all that apply

- EXISTING WATER WELLS Marshall County
- DEVELOPED SPRINGS Jan Pest, Clerk
- DWELLINGS Instrument 1458168
- AGRICULTURAL BUILDINGS 08/27/2019 @ 02:03:02 PM

OIL & GAS LEASE

Well Operator: Tug Hill Operating, LLC Book 1059 @ Page 209
By: David G. Delallo Pages Recorded 1
Its: Land Team Lead Recording Cost \$

11.00

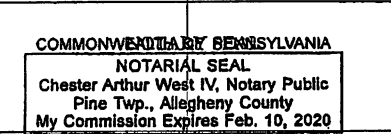
FOR EXECUTION BY A NATURAL PERSON

Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC as Attorney-In-Fact for Thomas John Fox
By: Douglas L. DeMartino
Its: Attorney-In-Fact
Signature: Douglas L. DeMartino
Date: 8/27/2019

Signature: _____
Telephone: 724-749-8388



Subscribed and sworn before me this 23rd day of August 2019

Notary Public

My Commission Expires 2-10-2020

OFFICE OF THE PENNSYLVANIA ASSOCIATION OF NOTARIES

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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 23rd day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 2:03 o'clock P M.

TESTE: Jan Pest Clerk

LIMITED POWER OF ATTORNEY

That I, Paul G. Fox, hereby make, name and appoint, Tug Hill Operating, LLC, its successors and assigns, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) waiving all well site restrictions listed under West Virginia Code 22-6A-12(a) for the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, located on Tax Map 14, Parcel 33 and depicted on the attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**.

I the said Paul G. Fox hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

Paul G. Fox 3-24-18 (SEAL)

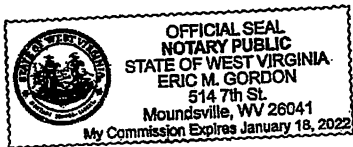
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 24th day of March, 2018, by Paul G. Fox.

Given under my hand this 24th day of March, 2018.

My commission expires: Jan 18, 2022.

(NOTARY SEAL/STAMP REQUIRED)



Notary Public for the aforesaid
County and/or State

RECEIVED
Office of Oil and Gas
SEP - 3 2019

WV Department of
Environmental Protection

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

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WAIVER

I, Paul G. Fox, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 625,222.67
County: Marshall UTM NAD 83 Northing: 4,402,288.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

<p>WELL SITE RESTRICTIONS BEING WAIVED *Please check all that apply</p> <p><input type="checkbox"/> EXISTING WATER WELLS <u>Marshall County</u> <u>Jan Pest, Clerk</u> <u>Instrument 1458163</u> <u>08/27/2019 @ 02:02:57 PM</u></p> <p><input type="checkbox"/> DEVELOPED SPRINGS</p> <p><input checked="" type="checkbox"/> DWELLINGS</p> <p><input type="checkbox"/> AGRICULTURAL BUILDINGS</p> <p>OIL & GAS LEASE Well Operator: <u>Tug Hill Operating, LLC</u> By: <u>David G. Delallo</u> Its: <u>Land Team Lead</u></p> <p><u>Book 1059 @ Page 204</u> <u>Pages Recorded 1</u> <u>Recording Cost \$ 11.00</u></p>	<p>FOR EXECUTION BY A NATURAL PERSON Signature: _____ Print Name: _____ Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC. Company: <u>TH Exploration, LLC as Attorney-in-Fact for Paul G. Fox</u> By: <u>Douglas L. DeMartino</u> Its: <u>Attorney-in-Fact</u> Signature: <u>Douglas L. DeMartino</u> Date: <u>8/23/2019</u></p> <p>Signature: _____ Telephone: <u>724-749-8388</u></p>
--	---

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

Subscribed and sworn before me this 23RD day of August 2019

Notary Public
My Commission Expires 2-10-2020

Oil and Gas Association of Notaries
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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

I, JAN PEST, Clerk of the County Commission of said County, do hereby certify that the annexed writing, bearing date on the 23rd day of August, 2019, was presented for and by me, admitted to record in my office upon the above certificate as to the parties therein named this 27th day of August, 2019 at 2:02 o'clock P M.

TESTE: Jan Pest Clerk

RECEIVED
Office of Oil and Gas
SEP - 3 2019
WV Department of
Environmental Protection

4705102267

LIMITED POWER OF ATTORNEY

That I, David Lee Franklin, hereby make, name and appoint, Tug Hill Operating, LLC, by and through its officers, agents or employees to be my limited power of attorney, for the sole and specific purpose of executing Well Location Restriction Waivers(s) that permit the conducting of oil or gas well work and the drilling of additional oil and gas wells on the Knob Creek Well Pad situate in Meade District, Marshall County, West Virginia, shown on Tax Map 14, as Parcel 33. See attached **Exhibit A**. Said waivers shall be of the type shown on the attached **Exhibit B**, differing only in the api number and operator well number located on the form.

I the said David Lee Franklin hereby declare that acts done by my said attorney for said specific and sole purpose shall be as good, valid and effective, to all intents and purposes whatsoever, as if the same had been made or done by me, and I hereby undertake to ratify whatsoever my attorney shall lawfully do or cause to be done, by virtue of these presents.

I further direct this Limited Power of Attorney shall be good and valid until a revocation thereof has been duly executed by the undersigned.

David Lee Franklin (SEAL)

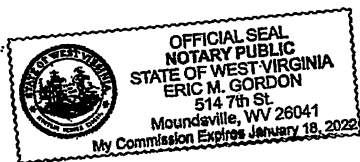
STATE OF West Virginia:
County of Marshall, to-wit:

The foregoing instrument was acknowledged before me this 29th day of March, 2018, by David Lee Franklin.

Given under my hand this 29th day of March, 2018.

My commission expires: Jan 18, 2022.

(NOTARY SEAL/STAMP REQUIRED)



Eric M. Gordon
Notary Public for the aforesaid
County and/or State

RECEIVED
Office of Oil and Gas
SEP - 3 2019

This Instrument Prepared By:
Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

WW-6RW
(1-12)

DPS LAND SERVICES CORP
6000 TOWN CENTER BOULEVARD, SUITE 145
CANDONSBURG PA 15317-5841

4705102267
BOOK 1059 PAGE 0207
API NO. 47-
OPERATOR WELL NO. Knab Creek N-4HM
Well Pad Name: Knab Creek

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

The well operator, Tug Hill Operating, LLC is applying for a permit from the State of West Virginia to conduct oil or gas well work. Please be advised that well work permits are valid for twenty-four (24) months.

Well Location Restrictions

Pursuant to West Virginia Code § 22-6A-12(a), 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.

WAIVER

I, David Lee Franklin, by my Attorney-in-Fact, TH Exploration, LLC, hereby state that I have read the Instructions to Persons Named on Page WW-6A and the associated provisions listed above, and that I have received copies of a Notice of Application, an Application for a Well Work Permit on Form WW-6A and attachments consisting of pages one (1) through _____, including the erosion and sediment control plan, if required, and the well plat, all for proposed well work on the tract of land as follows:

State: West Virginia UTM NAD 83 Easting: 625,222.67
County: Marshall UTM NAD 83 Northing: 4,402,268.07
District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5 Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

WELL SITE RESTRICTIONS BEING WAIVED

*Please check all that apply

- EXISTING WATER WELLS Marshall County
- DEVELOPED SPRINGS Jan Pest, Clerk
- DWELLINGS Instrument 1458166
08/27/2019 @ 02:03:00 PM
- AGRICULTURAL BUILDINGS

OIL & GAS LEASE

Well Operator: Tug Hill Operating, LLC Book 1059 @ Page 207
By: David G. Delaio Pages Recorded 1
Its: Land Team Lead Recording Cost \$ 11.00

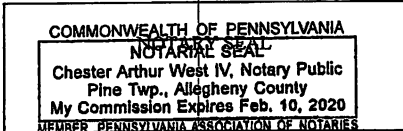
FOR EXECUTION BY A NATURAL PERSON

Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC as Attorney-in-Fact for David Lee Franklin
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: Douglas L. DeMartino
Date: 8/23/2019

Signature: _____
Telephone: 724-749-8388



Subscribed and sworn before me this 23 day of August 2019

Notary Public

My Commission Expires 2-10-2020

Oil and Gas Privacy Notice:

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

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

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TESTE: Jan Pest Clerk

RECEIVED
Office of Oil and Gas
SEP - 3 2019
WV Department of
Environmental Protection

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Linda Lee Franklin (SEAL)

STATE OF West Virginia:

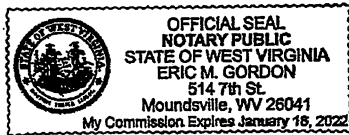
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Given under my hand this 29th day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



Eric M. Gordon

Notary Public for the aforesaid County and/or State

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

This Instrument Prepared By:

Eric M. Gordon, Esquire
Berry, Kessler, Crutchfield, Taylor & Gordon
514 Seventh Street
Moundsville, WV 26041
(304) 845-2580

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL LOCATION RESTRICTION WAIVER

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District: Meade Public Road Access: St. Joseph Road - County Route 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC-10)

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials and I therefore waive all well site restrictions listed under West Virginia Code § 22-6A-12(a).

WELL SITE RESTRICTIONS BEING WAIVED *Please check all that apply		FOR EXECUTION BY A NATURAL PERSON	
<input type="checkbox"/> EXISTING WATER WELLS	<u>Marshall County</u>	Signature: _____	Print Name: _____
<input type="checkbox"/> DEVELOPED SPRINGS	<u>Jan Pest, Clerk</u>	Date: _____	FOR EXECUTION BY A CORPORATION, ETC.
<input checked="" type="checkbox"/> DWELLINGS	<u>Instrument 1458161</u>	Company: <u>TH Exploration, LLC as Attorney-in-Fact for Linda Lee Franklin</u>	By: <u>Douglas L. DeMartino</u>
<input type="checkbox"/> AGRICULTURAL BUILDINGS	<u>08/27/2019 @ 02:02:55 PM</u>	Its: <u>Attorney-in-Fact</u>	Signature: <u>Douglas L. DeMartino</u>
Well Operator: <u>Tug Hill Operating, LLC</u>		Signature: <u>[Signature]</u>	Date: <u>8/23/2019</u>
By: <u>David G. Delallo</u>		Telephone: <u>724-749-8388</u>	
Its: <u>Land Team Lead</u>			
Pages Recorded <u>1</u>			
Recording Cost \$ <u>11.00</u>			

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

Subscribed and sworn before me this 23rd day of August 2019

Notary Public
My Commission Expires 2-10-2020

THE OFFICE OF OIL AND GAS ASSOCIATION OF NOTARIES
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 of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

STATE OF WEST VIRGINIA, MARSHALL COUNTY, SCT.:

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TESTE: Jan Pest Clerk

RECEIVED
Office of Oil and Gas
SEP - 3 2019
WV Department of 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

March 5, 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 Permit for the Knob Creek Pad, Marshall County
 Knob Creek N-4HM Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2018-0224 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21 SLS.

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

Very Truly Yours,

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

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

RECEIVED
 Office of Oil and Gas

SEP - 3 2019

WV Department of
 Environmental Protection



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Knob Creek N-4HM

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

RECEIVED
Office of Oil and Gas

SEP - 3 2019

WV Department of
Environmental Protection

Knob Creek 1 Site

Site Design, Construction Plan, & Erosion and Sediment Control Plans

Tug Hill Operating
Marshall County
Meade District

Latitude 39.77005962°
Longitude -80.70545789°
Middle Fish Creek Watershed

Pertinent Site Information

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

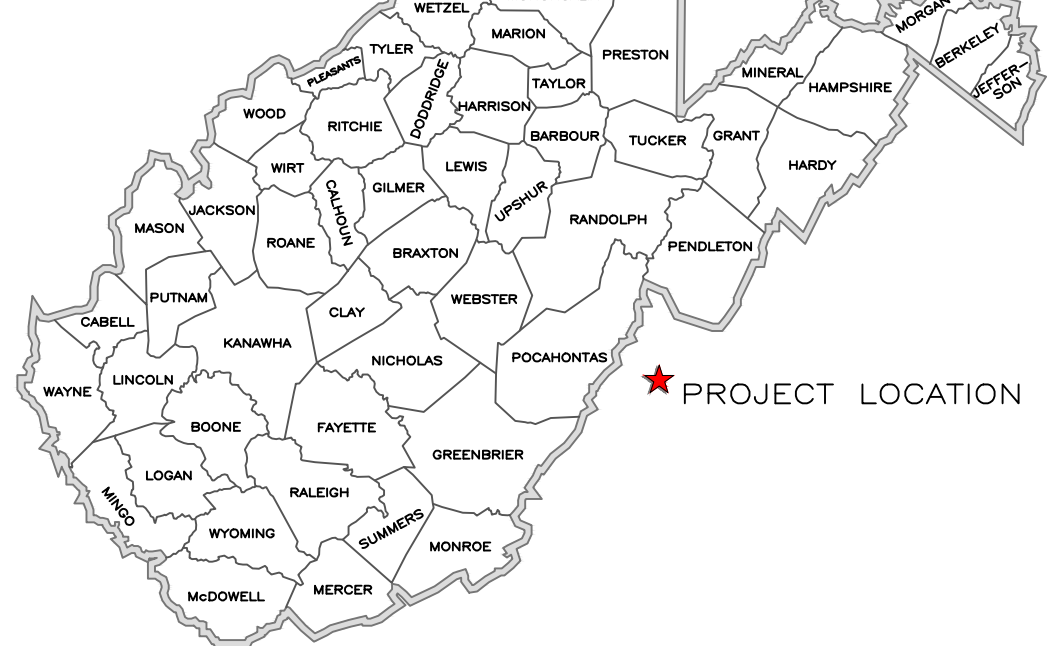
Property Owner Information - Knob Creek 1 Site

Owner	Meade District - Marshall County						
	TM - Parcel	Well Pad	Pond	Access Road	Topsoil/Excess	Add. Clearing	Total Disturbed
David L. Franklin	14-33	5.55	0.18	1.44	0.78	3.61	11.54
David L. Franklin	14-44	0.00	0.00	0.02	0.94	0.43	1.39
Site Totals (Ac)	5.55	0.18	1.44	1.72	4.04	12.93	

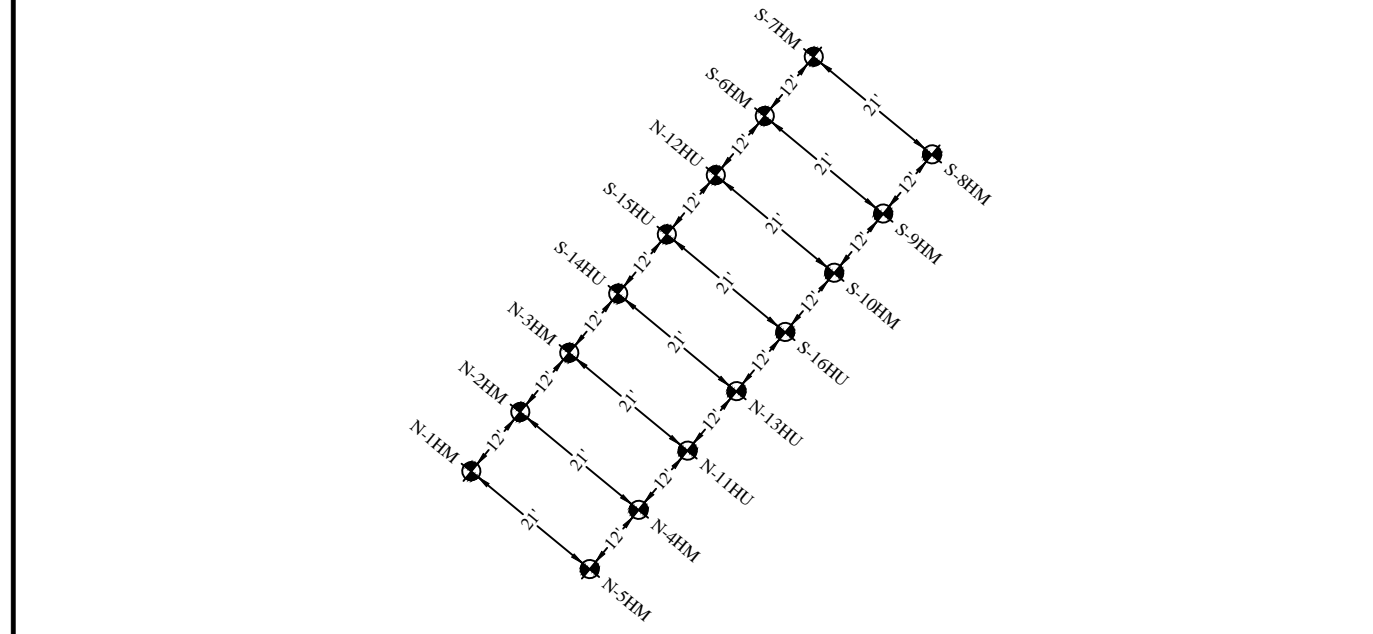


Exhibit A: Final Design: Issue for Permitting

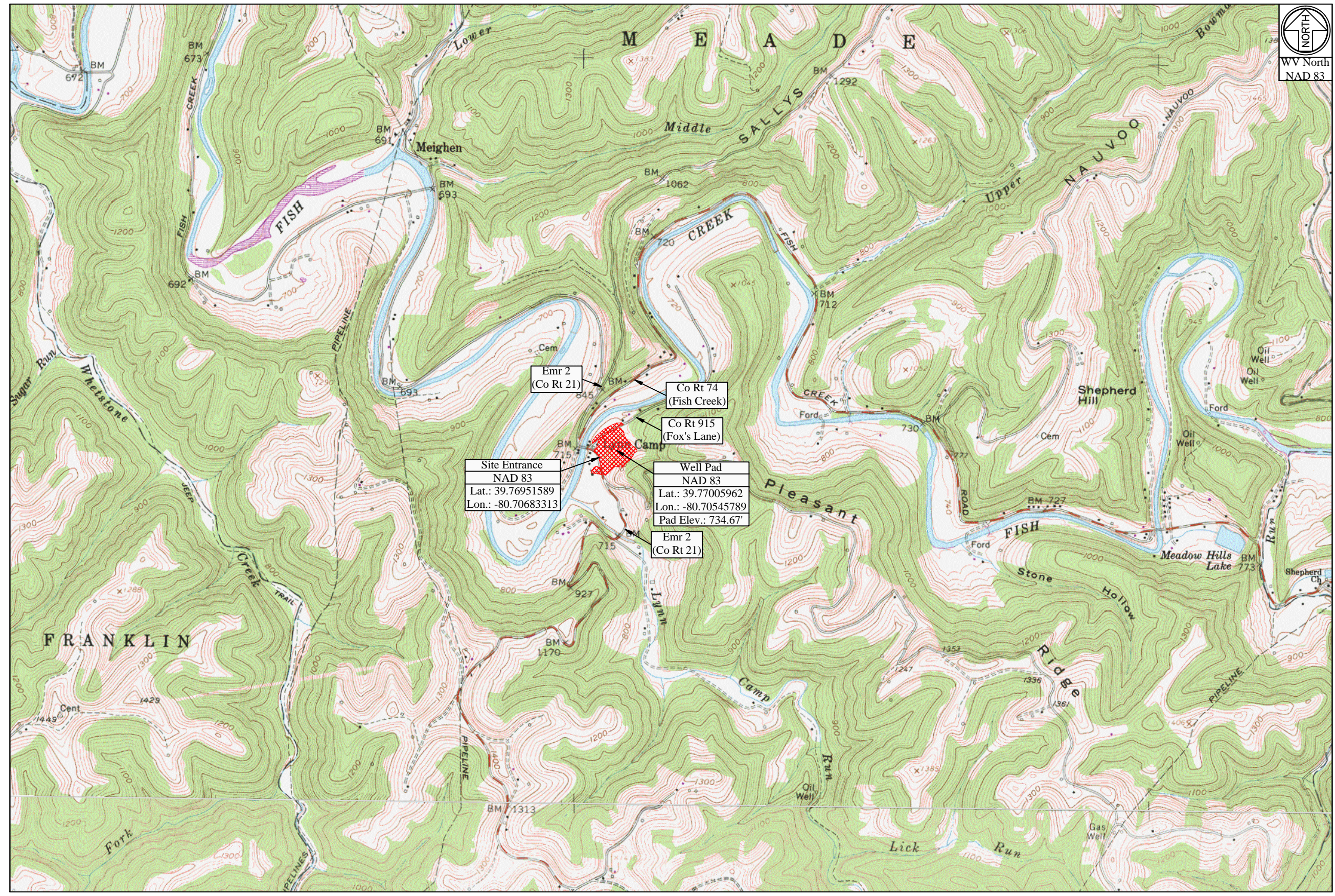
WEST VIRGINIA COUNTY MAP



Site Entrance	Center of Well Pad
WV-N NAD 83 N: 464675.31 WV-N NAD 83 E: 1629285.21 WV-N NAD 27 N: 464638.63 WV-N NAD 27 E: 1660722.29 Lat. NAD 83: 39.76951589 Lon. NAD 83: -80.70683313 Lat. NAD 27: 39.76943766 Lon. NAD 27: -80.70702410 UTM 17 NAD 83 N: 4402217.34 UTM 17 NAD 83 E: 525108.59	WV-N NAD 83 N: 464868.16 WV-N NAD 83 E: 1629674.40 WV-N NAD 27 N: 464831.46 WV-N NAD 27 E: 1661114.47 Lat. NAD 83: 39.77005962 Lon. NAD 83: -80.70545789 Lat. NAD 27: 39.76998138 Lon. NAD 27: -80.70564894 UTM 17 NAD 83 N: 4402278.07 UTM 17 NAD 83 E: 525226.17 Pad Elev.: 734.67'



S-7HM	S-6HM	N-12HU	N-11HU	N-10HU	N-9HU	N-8HU	N-7HU	N-6HU	N-5HU	N-4HU	N-3HU	N-2HU	N-1HU
WV-N NAD 83 N: 464904.40 WV-N NAD 83 E: 1629692.01 WV-N NAD 27 N: 464867.71 WV-N NAD 27 E: 1661129.07 Lat. NAD 83: 39.77015977 Lon. NAD 83: -80.70536998 Lat. NAD 27: 39.77008153 Lon. NAD 27: -80.70558803 UTM 17 NAD 83 (m) N: 4402289.20 UTM 17 NAD 83 (m) E: 525231.36	WV-N NAD 83 N: 464895.15 WV-N NAD 83 E: 1629684.36 WV-N NAD 27 N: 464858.46 WV-N NAD 27 E: 1661121.43 Lat. NAD 83: 39.77013409 Lon. NAD 83: -80.70542372 Lat. NAD 27: 39.77005584 Lon. NAD 27: -80.70561477 UTM 17 NAD 83 (m) N: 4402286.35 UTM 17 NAD 83 (m) E: 525229.07	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79	WV-N NAD 83 N: 464885.90 WV-N NAD 83 E: 1629676.72 WV-N NAD 27 N: 464849.20 WV-N NAD 27 E: 1661113.79 Lat. NAD 83: 39.77010840 Lon. NAD 83: -80.70545046 Lat. NAD 27: 39.77003016 Lon. NAD 27: -80.70564151 UTM 17 NAD 83 (m) N: 4402283.49 UTM 17 NAD 83 (m) E: 525226.79



Access Road			
Surface Owner	TM - Parcel	Road Length	Type
David L. Franklin	14-33	434.29'	New Access Road Construction

Disturbed Area	
Well Pad Construction	5.55 Ac
Collection Pond Construction	0.18 Ac
Access Road Construction	1.44 Ac
Topsoil / Excess Material	1.72 Ac
Additional Clearing	4.04 Ac
Total Disturbed Area	12.93 Ac
Additional Information	
Total Wasted Acres Disturbed	1.44 Ac
Total Linear Feet of Access Road	434.29'

Knob Creek 1 Site Quantities						
Description	Cut (CY)	Fill (CY)	Spoil (CY)	Borrow (CY)	Max. Slope	Length of Slope
Well Pad	56,618.17	48,114.99	8,503.18	N/A	N/A	N/A
Well Pad Access Road	694.75	2,994.56	N/A	2,299.81	10.00%	231.74'
Collection Pond	946.88	146.27	800.61	N/A	N/A	N/A
County Road Ditch Widening	1,091.99	0.00	1,091.99	N/A	N/A	N/A
Topsoil/Excess Material Stockpile	0.00	17,190.01	N/A	17,190.01	N/A	N/A
Totals	59,351.79	68,445.83	10,305.78	19,489.82		
			-9,094.04		(Excess Spoil Capacity)	

Project Contacts

Tug Hill Operating	Survey and Engineer
Jonathan White - Regulatory Analyst 724-485-2000 Off. 304-689-7676 Cell	Kenneth Kelly 304-338-6985 Off.
Geoff Radler - V.P. Production 817-632-5200 Off.	John P. See 304-442-0220 Off.
	Zachary Summerfield 304-338-6987 Off.

Tug Hill Operating, LLC
380 Southpointe Blvd
Southpointe Plaza II, Suite 200
Canonsburg, PA 15317

Environmental:
Wetland Delineations as provided by Allstar Ecology dated 04-9-2019

Topographic Information:
The topographic information shown herein is based on aerial photography by Blue Mountain Aerial Mapping, Burton, WV

MISS UTILITY OF WEST VIRGINIA
1-800-245-4848
West Virginia State Law
Section XIV, Chapter 24-C requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW
Know what's below. Call before you dig.

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 not within the AOI

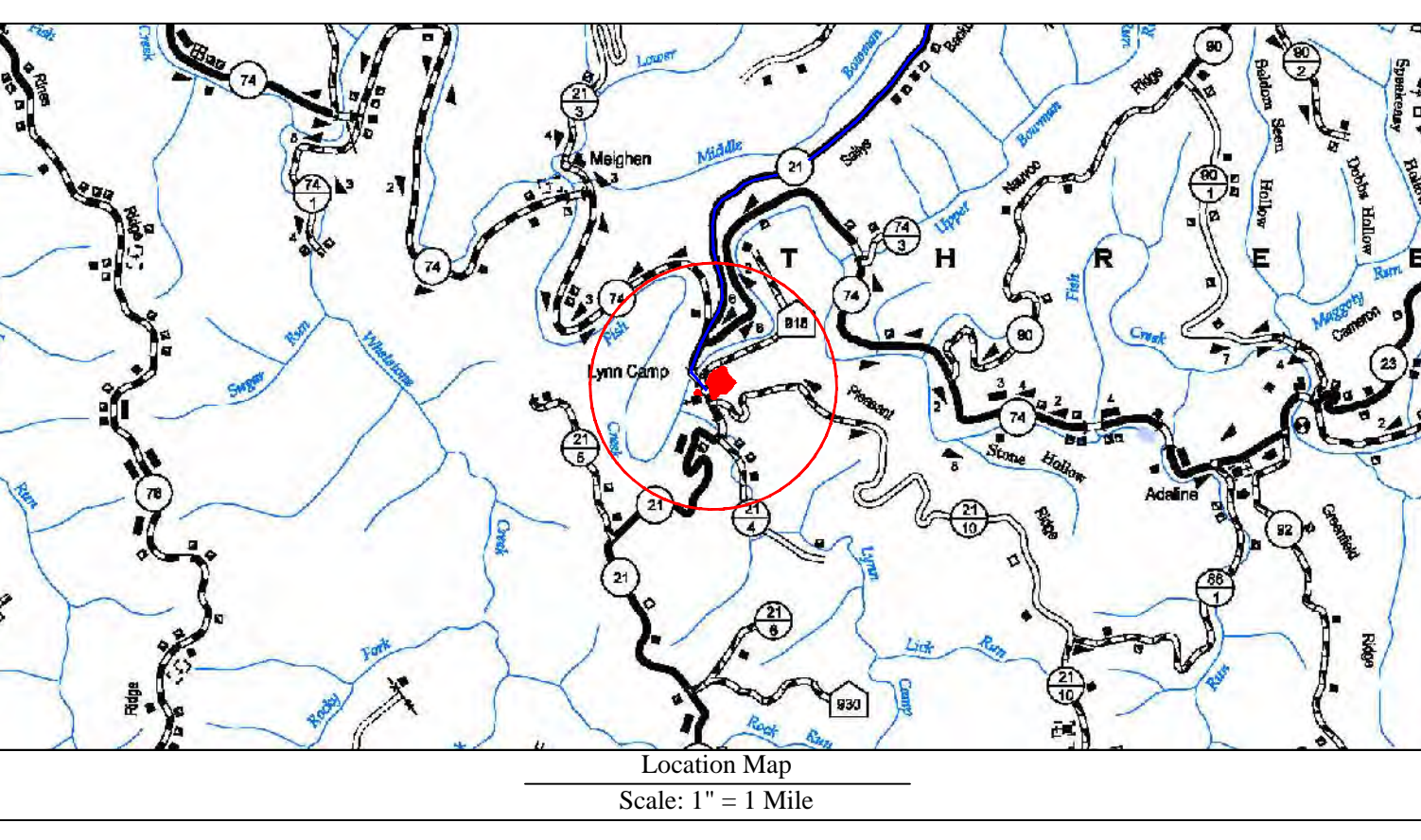
WVDEP Website files show that there are no active and/or abandoned gas wells within the AOI

Floodplain Conditions	
Do site construction activities take place in a floodplain:	NO
Permit needed from county floodplain coordinator:	NO
Flood Hazard Zone:	X
HEC-RAS Study completed:	N/A
Floodplain shown on drawings:	N/A
FIRM Map Number(s) for site:	5405IC 0173E
Acres of construction in floodplain:	N/A

Approach Routes:

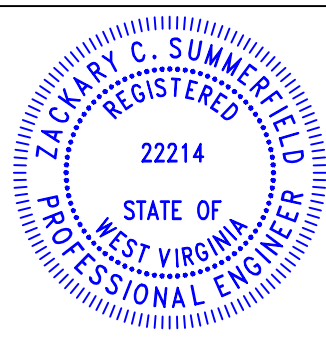
From the intersection of WV Rt 2 and Co Rt 17 (12th Street) in Moundsville, WV. Turn onto 12th Street (towards fairgrounds). Follow Co Rt 17 (12th Street) for 1.1 mi. Co Rt 17 (12th Street) becomes Co Rt 17 (Fork Ridge Rd). Follow Co Rt 17 (Fork Ridge Rd) for 0.2 mi. Turn Right onto Co Rt 54 (Big Grave Creek Rd). Follow Co Rt 54 for 7.8 mi. Turn Left onto Co Rt 21 (Roberts Ridge St Joseph Rd). Follow Co Rt 21 for 1.7 mi. Turn Right onto Emr Rt 2 (Co Rt 21). Follow Emr Rt 2 for 5.0 mi. The site entrance will be on the Left (East) side of the road.

Site Locations (NAD 27)			Site Locations (NAD 83)		
Structure	Latitude (DD)	Longitude (DD)	Structure	Latitude (DD)	Longitude (DD)
Site Entrance	39.76951589	-80.70702410	Site Entrance	39.76951589	-80.70683313
Center of Well Pad	39.76998138	-80.70564894	Center of Well Pad	39.77005962	-80.70545789



Well Location Restrictions

- All Pad construction complies with the following restrictions.
- *250' from an existing well or developed spring used for human or domestic animals.
 - *100' from the edge of disturbance to wetlands, perennial streams, natural or artificial lake, pond or reservoir.
 - *300' from the edge of disturbance to a naturally reproducing trout stream.
 - *1,000' of a surface or ground water intake to a public water supply.
- (Well Location Restrictions of WV Code 22-6A-12)



Design Certification
The drawings, construction notes and reference diagrams attached hereto have been prepared in accordance with the West Virginia Code of State Rules, Division of Environmental Protection, Office of Oil and Gas Section 24-C.
All Plans, Sheets, and/or Reference Diagrams included in this design constitute a complete set of plans. A complete set of plans is necessary to construct the site in accordance with the design.
Zachary C. Summerfield
RPE 22214
Kelly Surveying PLLC
COA: C04232-00
Date: 04-10-2019

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N3	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Clearing Exhibit
5	Overall Plan View
6	E&S Plan View
7	Toe Key Exhibit
8	Plan View
9-10	Cross Sections - Well Pad
11	Cross Sections - Access Road
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M3	Production Exhibit
D1-D2	Erosion and Sediment Control Details
R1	Access Road Details
P1	Pad Details

Revision
Design
Design, LOD Expansion

Date
03-20-2018
04-10-2019

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly Surveying
22214
2000 W. 24th St.
Martinsburg, WV 26159
304-338-6985

Cover Sheet

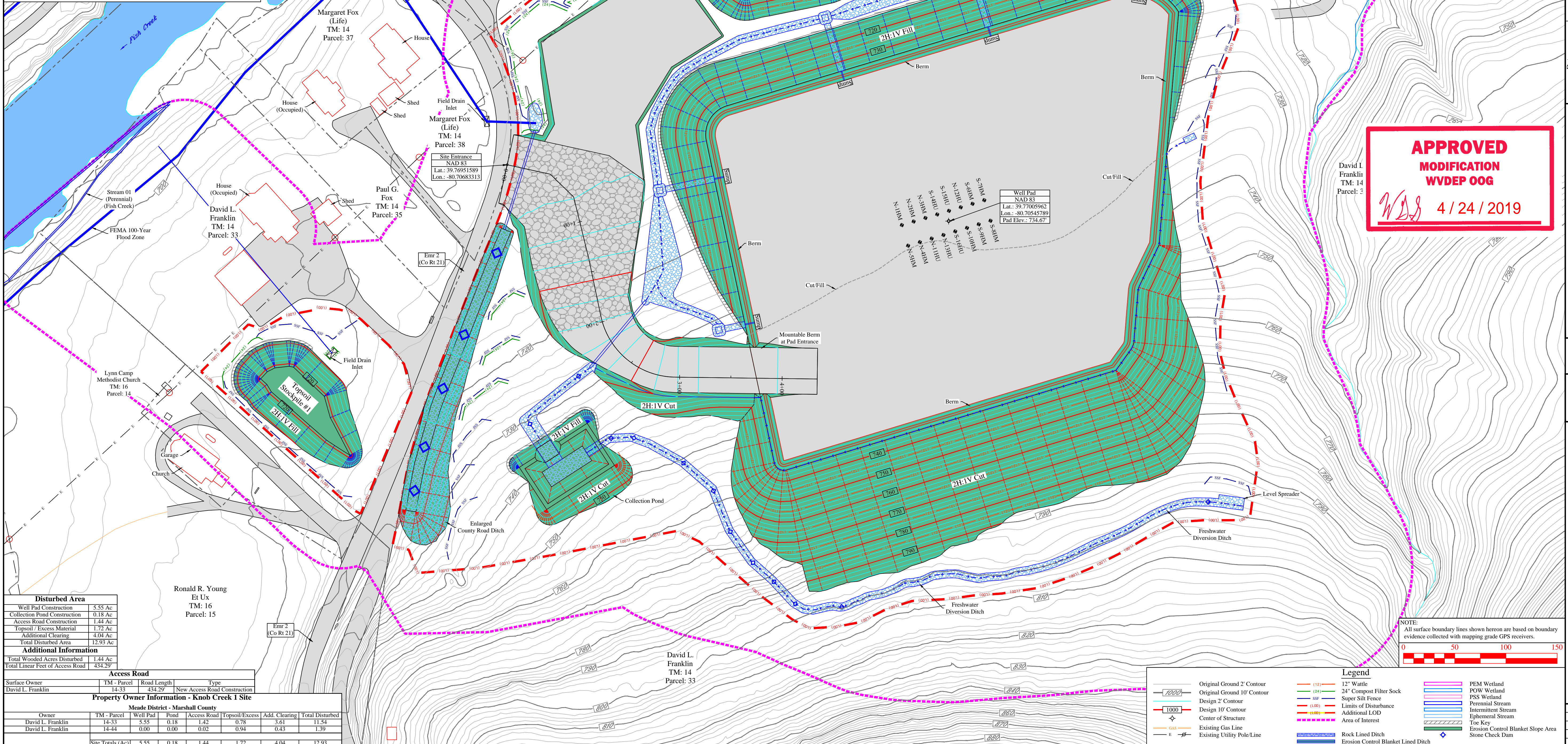
Knob Creek 1 Site
Meade District
Marshall County, WV

Date: 03/20/2018
Scale: As Shown
Designed By: ZS
File No.
Sheet 1 of 11

**Knob Creek 1 Site
Tug Hill Operating**

Exhibit A: Final Design: Issue for Permitting

- CONSTRUCTION SEQUENCE**
- 1) Install Stabilized Construction Entrance at beginning of Access Road.
 - 2) Install all temporary/permanent erosion and sedimentation controls that do not require Clearing and/or grubbing to install. Seed and mulch all disturbed areas around the installed erosion and sedimentation controls.
 - 3) Clear the Proposed Well Pad and Access Road (Clearing is defined as the removal of trees, brush, down timber, rotten wood, rubbish, and other objectionable material at or above the original ground elevation not designated to be retained. Clearing also includes the removal of fences, posts, signs and demolition or removal of other obstructions interfering with the proposed work).
 - 4) Install the remaining temporary/permanent erosion and sedimentation controls that required clearing/grubbing. Seed and mulch all disturbed areas around the installed erosion and sedimentation controls.
 - 5) Grub the Proposed Well Pad Access Road (Grubbing is defined as the removal from below the original ground elevation of stumps, roots, brush, organic materials, and debris as well as concrete and brick and other obstructions interfering with the proposed work). (Grubbing shall be kept to a minimum to reduce the amount of exposed soil prior to immediate construction)
 - 6) Construct the Proposed Well Pad Access Road
Install Toe Keys and Bonding Benches
Install Pipe Crossing #1-2
 - 7) Seed and mulch and install erosion control blankets on all disturbed areas along the Proposed Well Pad Access Road. Prior to the placement of erosion control blankets, the surface shall be prepared and seeded. Seeding and mulching will be performed as the Proposed Access Road is constructed to minimize exposed soil.
 - 8) Grub the Proposed Well Pad and place topsoil in topsoil stockpile (Grubbing shall be kept to a minimum to reduce the amount of exposed soil prior to immediate construction)
Topsoil stockpile shall have toe keys
Topsoil stockpiles shall be graded to blend back into the existing slope.
 - 9) Construct the Proposed Well Pad
Install Toe Keys and Bonding Benches
Install Well Pad Berm
Install on-pad sumps
 - 10) Seed and mulch and install erosion control blankets on all disturbed areas along the Proposed Well Pad, including Well Pad slopes (prior to the placement of the erosion control blankets, the slopes shall be prepared and seeded)
 - 11) Keep all erosion and sedimentation controls in place until there is 70% growth over the entire site.
- The contractor shall not deviate from the above listed construction sequence without the written consent of the design engineer. The contractor must provide a written explanation and provide an updated construction sequence when requesting permission to deviate from the construction sequence.



**APPROVED
MODIFICATION
WVDEP OOG**
WJS 4/24/2019

Disturbed Area

Well Pad Construction	5.55 Ac
Collection Pond Construction	0.18 Ac
Access Road Construction	1.44 Ac
Topsoil Excess Material	1.72 Ac
Additional Clearing	4.04 Ac
Total Disturbed Area	12.93 Ac

Additional Information

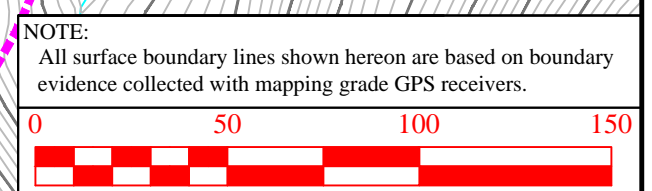
Total Wooded Acres Disturbed	1.44 Ac
Total Linear Feet of Access Road	434.29'

Access Road

Surface Owner	TM - Parcel	Road Length	Type
David L. Franklin	14-33	434.29'	New Access Road Construction

Property Owner Information - Knob Creek 1 Site

Owner	Meade District - Marshall County						
	TM - Parcel	Well Pad	Pond	Access Road	Topsoil/Excess	Add. Clearing	Total Disturbed
David L. Franklin	14-33	5.55	0.18	1.42	0.78	3.61	11.54
David L. Franklin	14-44	0.00	0.00	0.02	0.94	0.43	1.39
Site Totals (Ac)	5.55	0.18	1.44	1.72	4.04	12.93	



- Legend**
- Original Ground 2' Contour
 - Original Ground 10' Contour
 - Design 2' Contour
 - Design 10' Contour
 - Center of Structure
 - Existing Gas Line
 - Existing Utility Pole/Line
 - 12" Wattle
 - 24" Composite Filter Sock
 - Super Silt Fence
 - Limits of Disturbance
 - Additional LOD
 - Area of Interest
 - Rock Lined Ditch
 - Erosion Control Blanket Lined Ditch
 - FEMA Wetland
 - POW Wetland
 - PSS Wetland
 - Perennial Stream
 - Intermittent Stream
 - Ephemeral Stream
 - Toe Key
 - Erosion Control Blanket Slope Area
 - Stone Check Dam

Date: 03-20-2018
04-10-2019

Revision: Design
Design: LOD Expansion

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly Surveying
254
254
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Overall Plan View
Knob Creek 1 Site
Meade District
Marshall County, WV

Date: 03/20/2018
Scale: As Shown
Designed By: ZS
File No.
Sheet 5 of 11