



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

Thursday, March 5, 2020
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for KNOB CREEK S-15HU
47-051-02289-00-00

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 S-15HU
Farm Name: DAVID LEE FRANKLIN
U.S. WELL NUMBER: 47-051-02289-00-00
Horizontal 6A New Drill
Date Issued: 3/5/2020

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

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

PERMIT CONDITIONS

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



west virginia department of environmental protection

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

Randall M. Albert, Chairman
dep.wv.gov

February 19, 2020

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

RE: Application for Deep Well Permit – API #47-051-02289

COMPANY: Tug Hill Operating, LLC

FARM: David Lee Franklin Knob Creek S-15HU

COUNTY: Marshall DISTRICT: Meade QUAD: Glen Easton

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

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes; Docket 292-294 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

A handwritten signature in blue ink that reads 'Susan Rose'.

Susan Rose
Administrator

**Heaven Hill 2-8HU 47-051-01912; Heaven Hill 2W-12HU 47-051-01952; Heaven Hill 2W-13HU 47-051-01957; Keith Stern N-13HU 47-051-02265; Keith Stern N-14HU 47-051-02252; Keith Stern N-15HU 47-051-02241; Keith Stern N-16HU 47-051-02242; Keith Stern S-19HU 47-051-02244; Keith Stern S-17HU 47-051-02266; Keith Stern S-18HU 47-051-02243; Knob Creek N-12HU 47-051-02268; Knob Creek N-11HU 47-051-02287; Knob Creek S-14HU 47-051-02288; Knob Creek S-16HU 47-051-02290; Knob Creek N-13HU 47-051-02269

4705102289

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Knob Creek S-15HU
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 Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Knob Creek S-15HU 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: 737' Elevation, proposed post-construction: 737'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

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2/4/2020

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

Point Pleasant is the target formation at a depth of 11,034' - 11,165' - thickness of 131' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,315'

9) Formation at Total Vertical Depth: Trenton, plug back to Reedsville

10) Proposed Total Measured Depth: 21,065'

11) Proposed Horizontal Leg Length: 9,328.22'

12) Approximate Fresh Water Strata Depths: 70' ; 380'

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

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickley Coal - 292' ; 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

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

Depth: _____

Seam: _____

Owner: _____

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WW-6B
(04/15)

API NO. 47- 051

OPERATOR WELL NO. Knob Creek S-15HU

Well Pad Name: Knob Creek

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	480'	480'	831 FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2200'	2200'	1,558FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,095'	10,095'	3,271FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	21,065'	21,065'	4,997FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		10,375'	
Liners							

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9/27/19

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	20"	26"	.5	2,410	1,928	SEE # 24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE #24	1.99
Production	5 1/2"	8 1/2"	.415	16,510	10,864	SEE #24	1.18
Tubing	2 7/8"			11,624	11,385		
Liners							

PACKERS

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

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WW-6B
(10/14)

API NO. 47-051 -
OPERATOR WELL NO. Knob Creek S-15HU
Well Pad Name: Knob Creek

JM
2/4/2020

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. Log vertical section and run a solid cement plug back to proposed KOP (9,875'). Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 23,317,500 lb proppant and 360,506 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

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 third joint. Production casing will have one centralizer every third joint in lateral, one centralizer every joint through curve, one centralizer every third joint to surface.

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

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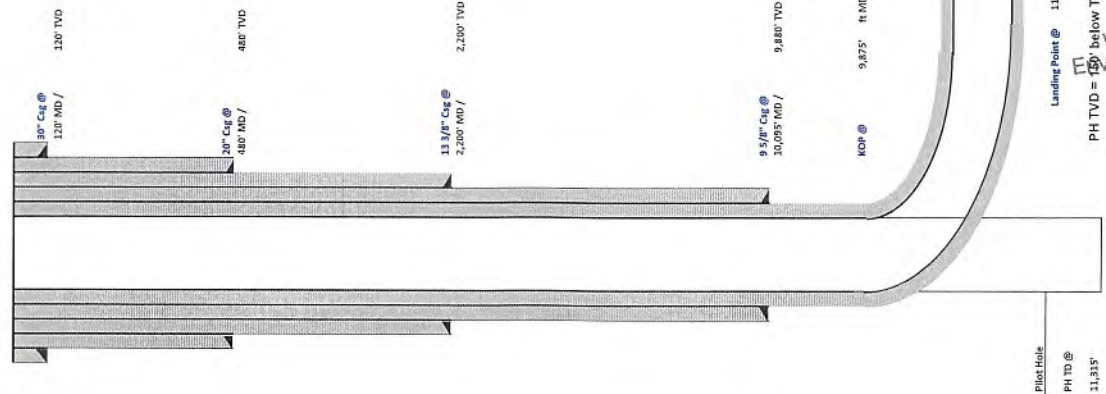
*Note: Attach additional sheets as needed.

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WELL NAME: Knob Creek S-15HU COUNTY: Marshall
 STATE: WV DISTRICT: Meade
 DF Elev: 737' GL Elev: 737'
 TD: 21,065'
 TH Latitude: 39.77009798
 TH Longitude: -80.70536548
 BH Latitude: 39.74862101
 BH Longitude: -80.68820401



Formation	Depth TVD
Deepest Fresh Water	380'
Sewickley Coal	292'
Pittsburgh Coal	374'
Big Lime	1,698'
Berea	2,109'
Tully	6,205'
Marcellus	6,210'
Onongaga	6,361'
Salina	6,978'
Lockport	8,029'
Utica	10,771'
Point Pleasant	11,694'
Landing Depth	11,084'
Trenton	11,165'
Pilot Hole TD	11,315'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	26	20	480'	480'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,200'	2,200'	94.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,095'	9,880'	47	HPPS110	Surface
Production	8 1/2	5 1/2	21,065'	11,247'	23	HCP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
Secks	Class	Density	Fluid Type	Centralizer Notes	
Conductor	A	15.6	Air	None	
Surface	A	15.6	Air	3 Centralizers at equal distance	
Intermediate 1	A	15	Air	1 Centralizer every other ft	
Intermediate 2	A	14.5	Air	1 Centralizer every other ft	
Production	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other ft to etc	

9/27/19

Lateral TD @ 21,065' ft MD
 11,247' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Knob Creek S-15HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	20"	J55	26"	480'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,200'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,095'	CTS
Production	5 1/2"	HCP110	8 1/2"	21,065'	CTS

Cement

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

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

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

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

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Area of Review

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (9/23/2019) 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 S-15HU

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

4705102289

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
4705100821	Perkins Oil and Gas, Inc	Unknown	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Well was producing as of December 2018
4705100823	Perkins Oil and Gas, Inc	Unknown	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	Well was producing as of December 2018
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 was plugged 12/4/1959
4705140010	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170030	Benedum Brothers	2869' TVD	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	State records are incomplete.
4705170137	South Penn Oil	2594' TVD	Gordon Sd	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Point Pleasant stimulation.	State records are incomplete.
4705170288	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170289	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170758	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170759	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170760	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170761	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.
4705170762	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. Appears to be an old shallow well, coal test bore hole or CBM well.	State records are incomplete.

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Well Reassignment Information: Reassigned From
 WEL井 COUNTY PERMIT TAX_DISTRICT QUAD_7S QUAD_8S LAT_DD LONG_DD UTM_E UTM_N

Location Information: View Map
 WEL井 COUNTY PERMIT TAX_DISTRICT QUAD_7S QUAD_8S LAT_DD LONG_DD UTM_E UTM_N

Owner Information:
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

Completion Information:
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

Production Gas Information (Volumes in MCF):
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

Production Oil Information (Volumes in Bbl):
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Production NGL Information (Volumes in Bbl):
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

Production Water Information (Volumes in Gallons):
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

Well Reassignment Information: Reassigned From
 WEL井 COUNTY PERMIT TAX_DISTRICT QUAD_7S QUAD_8S LAT_DD LONG_DD UTM_E UTM_N

Location Information: View Map
 WEL井 COUNTY PERMIT TAX_DISTRICT QUAD_7S QUAD_8S LAT_DD LONG_DD UTM_E UTM_N

Owner Information:
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

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Production NGL Information (Volumes in Bbl):
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WV Geological & Economic Survey

Well: County = 51 Permit = 30405

Location Information: View Map
 APN井 COUNTY PERMIT TAX_DISTRICT QUAD_7S QUAD_8S LAT_DD LONG_DD UTM_E UTM_N

Owner Information:
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

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Production NGL Information (Volumes in Bbl):
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Plugging Information:
 APN井 ID井 SURF井 STATUS井 SURFACE_OWNER井 WEL井 NUM井 CO井 NUM井 LEASE井 NUM井 MINERAL_OWNER井 OPERATOR井 AT井 COMPLETION井 PROG井 NO井 PROP井

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WV Geological & Economic Survey Well: County = 51 Permit = 40010

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_74	LAT_DEG	LONG_DEG	UTM_E	UTM_N
420410010	Wayne	40010	Wayne	18	25	78.25	37.5500	648000	4400000

There is no Bottom Hole Location data for this well.

There is no Owner/Completion data for this well.

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.

Stratigraphy Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_ID	PROP_TRIG_ID	TRIG_EST_ID
420410010	1102		2	Wayne	40010	1	1	Wayne	Wayne	Production	40010	40010	40010

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 = 70030

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_74	LAT_DEG	LONG_DEG	UTM_E	UTM_N
420410030	Wayne	70030	Wayne	18	25	78.25	37.5500	648000	4400000

There is no Bottom Hole Location data for this well.

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_ID	PROP_TRIG_ID	TRIG_EST_ID
420410030	1102		2	Wayne	70030	1	1	Wayne	Wayne	Production	70030	70030	70030

Completion Information:

API	CMP_ID	SPUD_DT	ELEV_GATM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHC	TUD	TMD	NEW_PIG	ROO	C_BEP	O_BEP	C_BEP	O_BEP
420410030	1102	7/20/00	20	Wayne	1102	1102	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

Pay/Show/Value Information:

API	CMP_ID	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	PAI_TOP	DEPTH_BOTTOM	PAI_BOTTOM	C_BEP	O_BEP	U_BEP	WATER_CUT
420410030	1102	Prod	Gas	1102	20	1102	1102	1102	1102	1102	1102	1102

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 = 70137

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_74	LAT_DEG	LONG_DEG	UTM_E	UTM_N
420410037	Wayne	70137	Wayne	18	25	78.25	37.5500	648000	4400000

There is no Bottom Hole Location data for this well.

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_ID	PROP_TRIG_ID	TRIG_EST_ID
420410037	1102		2	Wayne	70137	1	1	Wayne	Wayne	Production	70137	70137	70137

Completion Information:

API	CMP_ID	SPUD_DT	ELEV_GATM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHC	TUD	TMD	NEW_PIG	ROO	C_BEP	O_BEP	C_BEP	O_BEP
420410037	1102	8/18/00	20	Wayne	1102	1102	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

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 = 70288

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_74	LAT_DEG	LONG_DEG	UTM_E	UTM_N
420410088	Wayne	70288	Wayne	18	25	78.25	37.5500	648000	4400000

There is no Bottom Hole Location data for this well.

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_ID	PROP_TRIG_ID	TRIG_EST_ID
420410088	1102		2	Wayne	70288	1	1	Wayne	Wayne	Production	70288	70288	70288

Completion Information:

API	CMP_ID	SPUD_DT	ELEV_GATM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHC	TUD	TMD	NEW_PIG	ROO	C_BEP	O_BEP	C_BEP	O_BEP
420410088	1102	8/18/00	20	Wayne	1102	1102	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

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 = 70588

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_74	LAT_DEG	LONG_DEG	UTM_E	UTM_N
420410088	Wayne	70588	Wayne	18	25	78.25	37.5500	648000	4400000

There is no Bottom Hole Location data for this well.

Owner Information:

API	CMP_ID	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE_NUM	MINERAL_OWN	OPERATOR_A1	COMPLETION	PROP_ID	PROP_TRIG_ID	TRIG_EST_ID
420410088	1102		2	Wayne	70588	1	1	Wayne	Wayne	Production	70588	70588	70588

Completion Information:

API	CMP_ID	SPUD_DT	ELEV_GATM	FIELD	DEEPEST_FM	DEEPEST_FWT	INITIAL_CLASS	FINAL_CLASS	TYPE	RG	CMP_MTHC	TUD	TMD	NEW_PIG	ROO	C_BEP	O_BEP	C_BEP	O_BEP
420410088	1102	8/18/00	20	Wayne	1102	1102	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production	Production

There is no Pay data for this well.

There is no Production Gas data for this well.

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

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

There is no Production Water data for this well.

There is no Stratigraphy data for this well.

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

There is no Plugging data for this well.

There is no Sample data for this well.

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WV Geological & Economic Survey

Well: County = 51 Permit = 70758

Location Information: View Map

API: COUNTY PERMIT TAX DISTRICT QUAD_7E QUAD_7E LAT_DD LONG_DD UTM_E UTM_N

There is no Bottom Hole Location data for this well

Owner Information: API: CMP_ID SURF STATUS SURFACE_OWNER WELL_NUM CO_RUM LEASE_NUM MINERAL_OWN OPERATOR_A COMPLETION_PROP_VO PROP_TRCT_ID TR_LEV_ID

Completion Information: API: CMP_ID SURF_ID ELEV DATUM FIELD DEEPEST_FM DEEPEST_FTH INITIAL_CLASS FINAL_CLASS TYPE RG CMP_MIND TWD TWD_NEW_FTS ROD O_BEF O_AFT O_BEF O_AFT

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
There is no Production NGL data for this well
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 = 70759

Location Information: View Map

API: COUNTY PERMIT TAX DISTRICT QUAD_7E QUAD_7E LAT_DD LONG_DD UTM_E UTM_N

There is no Bottom Hole Location data for this well

Owner Information: API: CMP_ID SURF STATUS SURFACE_OWNER WELL_NUM CO_RUM LEASE_NUM MINERAL_OWN OPERATOR_A COMPLETION_PROP_VO PROP_TRCT_ID TR_LEV_ID

Completion Information: API: CMP_ID SURF_ID ELEV DATUM FIELD DEEPEST_FM DEEPEST_FTH INITIAL_CLASS FINAL_CLASS TYPE RG CMP_MIND TWD TWD_NEW_FTS ROD O_BEF O_AFT O_BEF O_AFT

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
There is no Production NGL data for this well
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 = 70760

Location Information: View Map

API: COUNTY PERMIT TAX DISTRICT QUAD_7E QUAD_7E LAT_DD LONG_DD UTM_E UTM_N

There is no Bottom Hole Location data for this well

Owner Information: API: CMP_ID SURF STATUS SURFACE_OWNER WELL_NUM CO_RUM LEASE_NUM MINERAL_OWN OPERATOR_A COMPLETION_PROP_VO PROP_TRCT_ID TR_LEV_ID

Completion Information: API: CMP_ID SURF_ID ELEV DATUM FIELD DEEPEST_FM DEEPEST_FTH INITIAL_CLASS FINAL_CLASS TYPE RG CMP_MIND TWD TWD_NEW_FTS ROD O_BEF O_AFT O_BEF O_AFT

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
There is no Production NGL data for this well
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 = 70761

Location Information: View Map

API: COUNTY PERMIT TAX DISTRICT QUAD_7E QUAD_7E LAT_DD LONG_DD UTM_E UTM_N

There is no Bottom Hole Location data for this well

Owner Information: API: CMP_ID SURF STATUS SURFACE_OWNER WELL_NUM CO_RUM LEASE_NUM MINERAL_OWN OPERATOR_A COMPLETION_PROP_VO PROP_TRCT_ID TR_LEV_ID

Completion Information: API: CMP_ID SURF_ID ELEV DATUM FIELD DEEPEST_FM DEEPEST_FTH INITIAL_CLASS FINAL_CLASS TYPE RG CMP_MIND TWD TWD_NEW_FTS ROD O_BEF O_AFT O_BEF O_AFT

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
There is no Production NGL data for this well
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 = 70762

Location Information: View Map

API: COUNTY PERMIT TAX DISTRICT QUAD_7E QUAD_7E LAT_DD LONG_DD UTM_E UTM_N

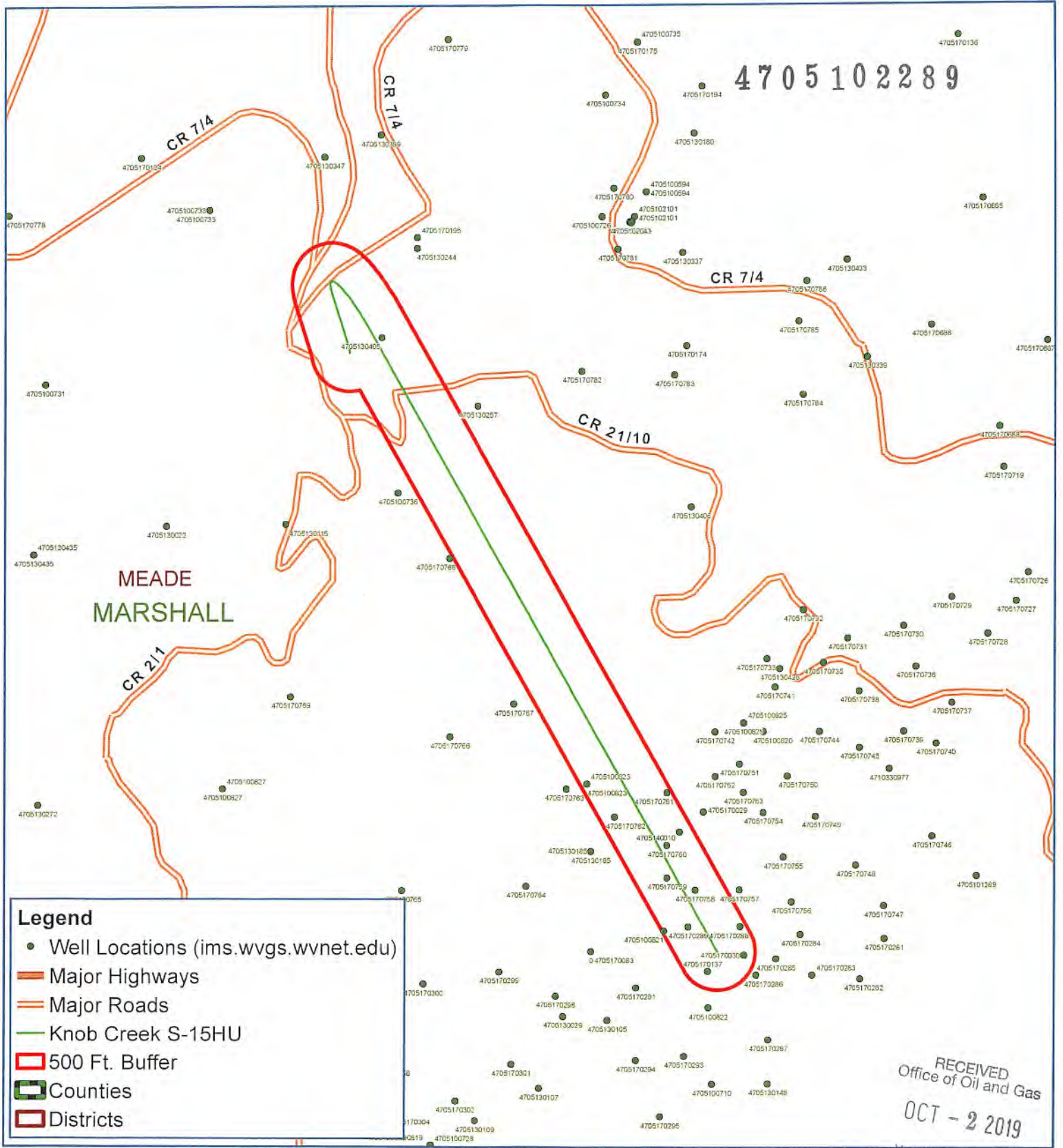
There is no Bottom Hole Location data for this well

Owner Information: API: CMP_ID SURF STATUS SURFACE_OWNER WELL_NUM CO_RUM LEASE_NUM MINERAL_OWN OPERATOR_A COMPLETION_PROP_VO PROP_TRCT_ID TR_LEV_ID

Completion Information: API: CMP_ID SURF_ID ELEV DATUM FIELD DEEPEST_FM DEEPEST_FTH INITIAL_CLASS FINAL_CLASS TYPE RG CMP_MIND TWD TWD_NEW_FTS ROD O_BEF O_AFT O_BEF O_AFT

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
There is no Production NGL data for this well
There is no Production Water data for this well
There is no Stratigraphy data for this well
There is no Wireline (E-Log) data for this well
There is no Plugging data for this well
There is no Sample data for this well

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Knob Creek S - 15HU Meade District Marshall County, WV



Notes:

All locations are approximate and are for visualization purposes only.

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Map Prepared by:
PS
LAND SERVICES

4705102289



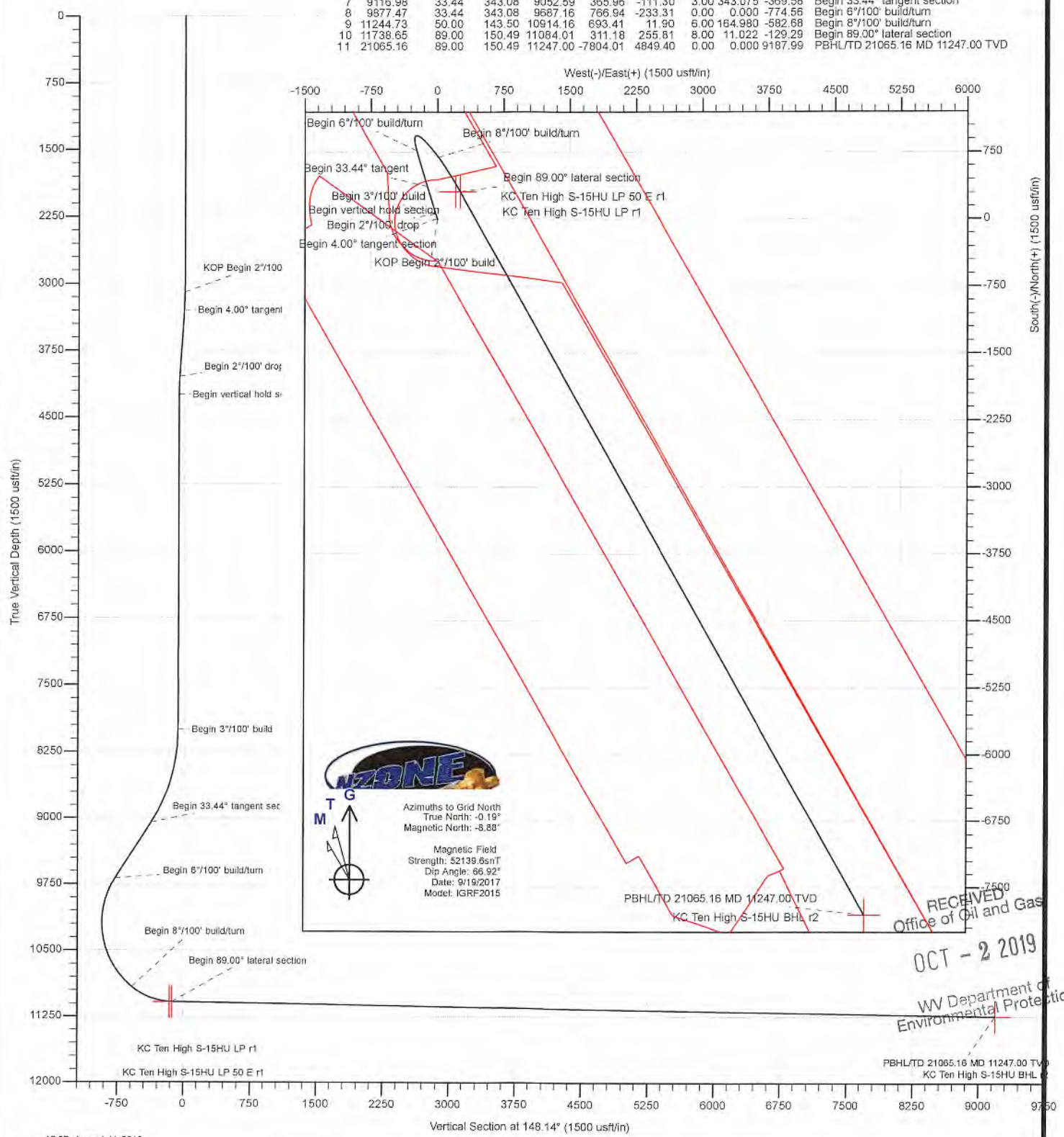
TUG HILL
OPERATING

Well: Knob Creek S-15HU (slot O)
Site: Knob Creek
Project: Marshall County, West Virginia.
Design: rev3

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level
Depth Reference: GL=737 @ 737.00usft
Surface Location
Northing: 14443154.70 Easting: 1723205.46 Latitude: 39.77009798 Longitude: -80.70536548

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.81°
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSEct	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	3300.00	4.00	343.13	3299.84	6.88	-2.03	2.00	343.130	-6.74	Begin 4.00° tangent section
4	4050.00	4.00	343.13	4048.01	56.74	-17.21	0.00	0.000	-57.28	Begin 2°/100' drop
5	4250.00	0.00	343.13	4247.85	63.42	-19.23	2.00	180.000	-64.02	Begin vertical hold section
6	8002.15	0.00	343.13	8000.00	63.42	-19.23	0.00	343.130	-64.02	Begin 3°/100' build
7	9116.98	33.44	343.08	9052.59	365.96	-111.30	3.00	343.075	-369.58	Begin 33.44° tangent section
8	9877.47	33.44	343.08	9687.16	766.94	-233.31	0.00	0.000	-774.56	Begin 6°/100' build/turn
9	11244.73	50.00	143.50	10814.16	693.41	11.90	6.00	164.980	-582.68	Begin 8°/100' build/turn
10	11738.65	89.00	150.49	11084.01	311.18	255.81	8.00	11.022	-129.29	Begin 89.00° lateral section
11	21065.16	89.00	150.49	11247.00	-7804.01	4849.40	0.00	0.000	9187.99	PBHL/TD 21065.16 MD 11247.00 TVD



Azimuths to Grid North
True North: -0.19°
Magnetic North: -8.88°
Magnetic Field
Strength: 52139.6nT
Dip Angle: 66.92°
Date: 9/19/2017
Model: IGRF2015

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PBHL/TD 21065.16 MD 11247.00 TVD
KC Ten High S-15HU BHL r2



Database:	DB_Jul2216dt_v14 It	Local Co-ordinate Reference:	Well Knob Creek S-15HU (slot O)
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 S-15HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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

Site	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 S-15HU (slot O)					
Well Position	+N/-S	0.00 usft	Northing:	14,443,154.70 usft	Latitude:	39.77009798
	+E/-W	0.00 usft	Easting:	1,723,205.46 usft	Longitude:	-80.70536548
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	52,139.61566214

Design	rev3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	148.14

Plan Survey Tool Program	Date	8/11/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,065.16 rev3 (Original Hole)	MWD	
			MWD - Standard	

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Planning Report - Geographic

4705102289

Database:	DB_Jul2216dt_v14 It	Local Co-ordinate Reference:	Well Knob Creek S-15HU (slot O)
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 S-15HU (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.000	
3,300.00	4.00	343.13	3,299.84	6.68	-2.03	2.00	2.00	0.00	343.130	
4,050.00	4.00	343.13	4,048.01	56.74	-17.21	0.00	0.00	0.00	0.000	
4,250.00	0.00	343.13	4,247.85	63.42	-19.23	2.00	-2.00	0.00	180.000	
8,002.15	0.00	343.13	8,000.00	63.42	-19.23	0.00	0.00	0.00	343.130	
9,116.98	33.44	343.08	9,052.59	365.96	-111.30	3.00	3.00	0.00	343.075	
9,877.47	33.44	343.08	9,687.16	766.94	-233.31	0.00	0.00	0.00	0.000	
11,244.73	50.00	143.50	10,914.16	693.41	11.90	6.00	1.21	11.73	164.980	
11,738.65	89.00	150.49	11,084.01	311.18	255.81	8.00	7.90	1.41	11.022	
21,065.16	89.00	150.49	11,247.00	-7,804.01	4,849.40	0.00	0.00	0.00	0.000	KC Ten High S-15HU

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Planning Report - Geographic

Database: DB_Jul2216dt_v14 lt
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek S-15HU (slot O)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-15HU (slot O)
 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	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
100.00	0.00	0.00	100.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
200.00	0.00	0.00	200.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
300.00	0.00	0.00	300.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
400.00	0.00	0.00	400.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
500.00	0.00	0.00	500.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
600.00	0.00	0.00	600.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
700.00	0.00	0.00	700.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
800.00	0.00	0.00	800.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
900.00	0.00	0.00	900.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,443,154.70	1,723,205.46	39.77009798	-80.70536548
KOP Begin 2°/100' build									
3,200.00	2.00	343.13	3,199.98	1.67	-0.51	14,443,156.37	1,723,204.95	39.77010257	-80.70536726
3,300.00	4.00	343.13	3,299.84	6.68	-2.03	14,443,161.38	1,723,203.44	39.77011634	-80.70537261
Begin 4.00° tangent section									
3,400.00	4.00	343.13	3,399.59	13.35	-4.05	14,443,168.05	1,723,201.41	39.77013469	-80.70537974
3,500.00	4.00	343.13	3,499.35	20.03	-6.07	14,443,174.73	1,723,199.39	39.77015304	-80.70538686
3,600.00	4.00	343.13	3,599.11	26.70	-8.10	14,443,181.40	1,723,197.36	39.77017139	-80.70539399
3,700.00	4.00	343.13	3,698.86	33.38	-10.12	14,443,188.08	1,723,195.34	39.77018974	-80.70540111
3,800.00	4.00	343.13	3,798.62	40.06	-12.15	14,443,194.75	1,723,193.31	39.77020809	-80.70540824
3,900.00	4.00	343.13	3,898.38	46.73	-14.17	14,443,201.43	1,723,191.29	39.77022645	-80.70541537
4,000.00	4.00	343.13	3,998.13	53.41	-16.20	14,443,208.10	1,723,189.26	39.77024480	-80.70542249
4,050.00	4.00	343.13	4,048.01	56.74	-17.21	14,443,211.44	1,723,188.25	39.77025397	-80.70542606
Begin 2°/100' drop									
4,100.00	3.00	343.13	4,097.92	59.67	-18.09	14,443,214.36	1,723,187.37	39.77026200	-80.70542917
4,200.00	1.00	343.13	4,197.85	63.00	-19.11	14,443,217.70	1,723,186.35	39.77027118	-80.70543274
4,250.00	0.00	343.13	4,247.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
Begin vertical hold section									
4,300.00	0.00	0.00	4,297.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
4,400.00	0.00	0.00	4,397.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
4,500.00	0.00	0.00	4,497.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
4,600.00	0.00	0.00	4,597.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
4,700.00	0.00	0.00	4,697.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318



Planning Report - Geographic

Database: DB_Jul2216dt_v14 It
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek S-15HU (slot O)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-15HU (slot O)
 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

WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,800.00	0.00	0.00	4,797.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
4,900.00	0.00	0.00	4,897.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,000.00	0.00	0.00	4,997.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,100.00	0.00	0.00	5,097.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,200.00	0.00	0.00	5,197.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,300.00	0.00	0.00	5,297.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,400.00	0.00	0.00	5,397.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,500.00	0.00	0.00	5,497.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,600.00	0.00	0.00	5,597.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,700.00	0.00	0.00	5,697.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,800.00	0.00	0.00	5,797.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
5,900.00	0.00	0.00	5,897.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,000.00	0.00	0.00	5,997.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,100.00	0.00	0.00	6,097.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,200.00	0.00	0.00	6,197.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,300.00	0.00	0.00	6,297.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,400.00	0.00	0.00	6,397.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,500.00	0.00	0.00	6,497.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,600.00	0.00	0.00	6,597.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,700.00	0.00	0.00	6,697.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,800.00	0.00	0.00	6,797.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
6,900.00	0.00	0.00	6,897.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,000.00	0.00	0.00	6,997.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,100.00	0.00	0.00	7,097.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,200.00	0.00	0.00	7,197.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,300.00	0.00	0.00	7,297.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,400.00	0.00	0.00	7,397.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,500.00	0.00	0.00	7,497.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,600.00	0.00	0.00	7,597.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,700.00	0.00	0.00	7,697.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,800.00	0.00	0.00	7,797.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
7,900.00	0.00	0.00	7,897.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
8,000.00	0.00	0.00	7,997.85	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
8,002.15	0.00	0.00	8,000.00	63.42	-19.23	14,443,218.12	1,723,186.23	39.77027233	-80.70543318
Begin 3°/100' build									
8,100.00	2.94	343.08	8,097.81	65.82	-19.96	14,443,220.52	1,723,185.50	39.77027892	-80.70543575
8,200.00	5.94	343.08	8,197.49	73.22	-22.21	14,443,227.92	1,723,183.25	39.77029926	-80.70544368
8,300.00	8.94	343.08	8,296.64	85.60	-25.98	14,443,240.29	1,723,179.48	39.77033329	-80.70545694
8,400.00	11.94	343.08	8,394.98	102.92	-31.25	14,443,257.62	1,723,174.21	39.77038092	-80.70547550
8,500.00	14.94	343.08	8,492.23	125.15	-38.02	14,443,279.85	1,723,167.44	39.77044202	-80.70549931
8,600.00	17.94	343.08	8,588.13	152.21	-46.25	14,443,306.91	1,723,159.21	39.77051642	-80.70552830
8,700.00	20.94	343.08	8,682.42	184.04	-55.94	14,443,338.74	1,723,149.52	39.77060392	-80.70556240
8,800.00	23.94	343.08	8,774.84	220.55	-67.05	14,443,375.25	1,723,138.41	39.77070428	-80.70560151
8,900.00	26.94	343.08	8,865.14	261.63	-79.55	14,443,416.33	1,723,125.91	39.77081722	-80.70564552
9,000.00	29.94	343.08	8,953.07	307.18	-93.41	14,443,461.88	1,723,112.05	39.77094243	-80.70569432
9,100.00	32.94	343.08	9,038.38	357.07	-108.59	14,443,511.77	1,723,096.87	39.77107958	-80.70574776
9,116.98	33.44	343.08	9,052.59	365.96	-111.30	14,443,520.66	1,723,094.16	39.77110402	-80.70575728
Begin 33.44° tangent section									
9,200.00	33.44	343.08	9,121.86	409.74	-124.62	14,443,564.44	1,723,080.84	39.77122436	-80.70580418
9,300.00	33.44	343.08	9,205.30	462.47	-140.66	14,443,617.16	1,723,064.80	39.77136930	-80.70586066
9,400.00	33.44	343.08	9,288.75	515.19	-156.71	14,443,669.89	1,723,048.76	39.77151425	-80.70591715
9,500.00	33.44	343.08	9,372.19	567.92	-172.75	14,443,722.62	1,723,032.71	39.77165919	-80.70597363
9,600.00	33.44	343.08	9,455.63	620.64	-188.79	14,443,775.34	1,723,016.67	39.77180414	-80.70603012
9,700.00	33.44	343.08	9,539.07	673.37	-204.84	14,443,828.07	1,723,000.62	39.77194908	-80.70608660



Planning Report - Geographic

Database: DB_Jul2216dt_v14 It
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek S-15HU (slot O)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-15HU (slot O)
 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

WV Department of Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,800.00	33.44	343.08	9,622.51	726.10	-220.88	14,443,880.79	1,722,984.58	39.77209403	-80.70614309
9,877.47	33.44	343.08	9,687.16	766.94	-233.31	14,443,921.64	1,722,972.15	39.77220632	-80.70618685
Begin 6°/100' build/turn									
9,900.00	32.14	343.73	9,706.09	778.64	-236.80	14,443,933.33	1,722,968.66	39.77223846	-80.70619912
10,000.00	26.41	347.35	9,793.29	825.91	-249.13	14,443,980.61	1,722,956.33	39.77236840	-80.70624245
10,100.00	20.81	352.77	9,884.90	865.26	-256.24	14,444,019.96	1,722,949.22	39.77247653	-80.70626729
10,200.00	15.49	1.83	9,979.91	896.26	-258.05	14,444,050.96	1,722,947.41	39.77256168	-80.70627337
10,300.00	10.89	19.03	10,077.28	918.56	-254.54	14,444,073.26	1,722,950.92	39.77262289	-80.70626082
10,400.00	8.30	52.22	10,175.95	931.93	-245.75	14,444,086.63	1,722,959.71	39.77265952	-80.70622918
10,500.00	9.51	90.99	10,274.83	936.21	-231.77	14,444,090.91	1,722,973.69	39.77267115	-80.70617938
10,600.00	13.55	113.67	10,372.84	931.36	-212.76	14,444,086.05	1,722,992.70	39.77265765	-80.70611179
10,700.00	18.66	125.16	10,468.90	917.43	-188.93	14,444,072.12	1,723,016.53	39.77261918	-80.70602714
10,800.00	24.17	131.70	10,561.98	894.57	-160.54	14,444,049.27	1,723,044.92	39.77255615	-80.70592636
10,900.00	29.87	135.90	10,651.03	863.04	-127.89	14,444,017.74	1,723,077.57	39.77246927	-80.70581054
11,000.00	35.65	138.85	10,735.10	823.18	-91.36	14,443,977.87	1,723,114.11	39.77235947	-80.70568097
11,100.00	41.49	141.06	10,813.25	775.42	-51.32	14,443,930.12	1,723,154.14	39.77222796	-80.70553906
11,200.00	47.37	142.82	10,884.63	720.30	-8.24	14,443,874.99	1,723,197.22	39.77207618	-80.70538636
11,244.73	50.00	143.50	10,914.16	693.41	11.90	14,443,848.11	1,723,217.36	39.77200216	-80.70531501
Begin 8°/100' build/turn									
11,300.00	54.34	144.54	10,948.05	658.08	37.53	14,443,812.78	1,723,242.99	39.77190492	-80.70522420
11,400.00	62.23	146.16	11,000.58	588.13	85.81	14,443,742.83	1,723,291.27	39.77171237	-80.70505319
11,500.00	70.12	147.57	11,040.95	511.57	135.75	14,443,666.27	1,723,341.21	39.77150167	-80.70487639
11,600.00	78.03	148.84	11,068.36	429.90	186.36	14,443,584.60	1,723,391.82	39.77127692	-80.70469723
11,700.00	85.94	150.03	11,082.30	344.70	236.66	14,443,499.40	1,723,442.12	39.77104248	-80.70451920
11,738.65	89.00	150.49	11,084.01	311.18	255.81	14,443,465.88	1,723,461.27	39.77095024	-80.70445144
Begin 89.00° lateral section									
11,800.00	89.00	150.49	11,085.08	257.80	286.03	14,443,412.49	1,723,491.49	39.77080337	-80.70434453
11,900.00	89.00	150.49	11,086.83	170.78	335.28	14,443,325.48	1,723,540.74	39.77056396	-80.70417027
12,000.00	89.00	150.49	11,088.57	83.77	384.53	14,443,238.47	1,723,589.99	39.77032456	-80.70399601
12,100.00	89.00	150.49	11,090.32	-3.24	433.79	14,443,151.46	1,723,639.25	39.77008515	-80.70382175
12,200.00	89.00	150.49	11,092.07	-90.25	483.04	14,443,064.45	1,723,688.50	39.76984575	-80.70364749
12,300.00	89.00	150.49	11,093.82	-177.26	532.29	14,442,977.43	1,723,737.75	39.76960634	-80.70347323
12,400.00	89.00	150.49	11,095.56	-264.28	581.55	14,442,890.42	1,723,787.01	39.76936694	-80.70329898
12,500.00	89.00	150.49	11,097.31	-351.29	630.80	14,442,803.41	1,723,836.26	39.76912753	-80.70312472
12,600.00	89.00	150.49	11,099.06	-438.30	680.05	14,442,716.40	1,723,885.51	39.76888812	-80.70295047
12,700.00	89.00	150.49	11,100.81	-525.31	729.30	14,442,629.39	1,723,934.77	39.76864872	-80.70277622
12,800.00	89.00	150.49	11,102.55	-612.32	778.56	14,442,542.37	1,723,984.02	39.76840931	-80.70260197
12,900.00	89.00	150.49	11,104.30	-699.34	827.81	14,442,455.36	1,724,033.27	39.76816990	-80.70242772
13,000.00	89.00	150.49	11,106.05	-786.35	877.06	14,442,368.35	1,724,082.52	39.76793049	-80.70225347
13,100.00	89.00	150.49	11,107.80	-873.36	926.32	14,442,281.34	1,724,131.78	39.76769109	-80.70207922
13,200.00	89.00	150.49	11,109.54	-960.37	975.57	14,442,194.33	1,724,181.03	39.76745168	-80.70190497
13,300.00	89.00	150.49	11,111.29	-1,047.38	1,024.82	14,442,107.31	1,724,230.28	39.76721227	-80.70173073
13,400.00	89.00	150.49	11,113.04	-1,134.40	1,074.08	14,442,020.30	1,724,279.54	39.76697286	-80.70155649
13,500.00	89.00	150.49	11,114.79	-1,221.41	1,123.33	14,441,933.29	1,724,328.79	39.76673345	-80.70138224
13,600.00	89.00	150.49	11,116.54	-1,308.42	1,172.58	14,441,846.28	1,724,378.04	39.76649404	-80.70120800
13,700.00	89.00	150.49	11,118.28	-1,395.43	1,221.83	14,441,759.27	1,724,427.30	39.76625463	-80.70103376
13,800.00	89.00	150.49	11,120.03	-1,482.44	1,271.09	14,441,672.25	1,724,476.55	39.76601522	-80.70085952
13,900.00	89.00	150.49	11,121.78	-1,569.46	1,320.34	14,441,585.24	1,724,525.80	39.76577581	-80.70068529
14,000.00	89.00	150.49	11,123.53	-1,656.47	1,369.59	14,441,498.23	1,724,575.05	39.76553640	-80.70051105
14,100.00	89.00	150.49	11,125.27	-1,743.48	1,418.85	14,441,411.22	1,724,624.31	39.76529699	-80.70033681
14,200.00	89.00	150.49	11,127.02	-1,830.49	1,468.10	14,441,324.21	1,724,673.56	39.76505758	-80.70016258
14,300.00	89.00	150.49	11,128.77	-1,917.50	1,517.35	14,441,237.19	1,724,722.81	39.76481817	-80.69998835
14,400.00	89.00	150.49	11,130.52	-2,004.52	1,566.61	14,441,150.18	1,724,772.07	39.76457876	-80.69981411
14,500.00	89.00	150.49	11,132.26	-2,091.53	1,615.86	14,441,063.17	1,724,821.32	39.76433935	-80.69963988



Planning Report - Geographic

Database: DB_Jul2216dt_v14 It
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek S-15HU (slot O)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-15HU (slot O)
 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

WV Department of
 Environmental Protection

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,600.00	89.00	150.49	11,134.01	-2,178.54	1,665.11	14,440,976.16	1,724,870.57	39.76409994	-80.69946565
14,700.00	89.00	150.49	11,135.76	-2,265.55	1,714.36	14,440,889.15	1,724,919.83	39.76386052	-80.69929143
14,800.00	89.00	150.49	11,137.51	-2,352.56	1,763.62	14,440,802.13	1,724,969.08	39.76362111	-80.69911720
14,900.00	89.00	150.49	11,139.25	-2,439.58	1,812.87	14,440,715.12	1,725,018.33	39.76338170	-80.69894297
15,000.00	89.00	150.49	11,141.00	-2,526.59	1,862.12	14,440,628.11	1,725,067.58	39.76314229	-80.69876875
15,100.00	89.00	150.49	11,142.75	-2,613.60	1,911.38	14,440,541.10	1,725,116.84	39.76290287	-80.69859453
15,200.00	89.00	150.49	11,144.50	-2,700.61	1,960.63	14,440,454.09	1,725,166.09	39.76266346	-80.69842030
15,300.00	89.00	150.49	11,146.25	-2,787.62	2,009.88	14,440,367.07	1,725,215.34	39.76242404	-80.69824608
15,400.00	89.00	150.49	11,147.99	-2,874.64	2,059.14	14,440,280.06	1,725,264.60	39.76218463	-80.69807186
15,500.00	89.00	150.49	11,149.74	-2,961.65	2,108.39	14,440,193.05	1,725,313.85	39.76194522	-80.69789765
15,600.00	89.00	150.49	11,151.49	-3,048.66	2,157.64	14,440,106.04	1,725,363.10	39.76170580	-80.69772343
15,700.00	89.00	150.49	11,153.24	-3,135.67	2,206.89	14,440,019.03	1,725,412.36	39.76146639	-80.69754921
15,800.00	89.00	150.49	11,154.98	-3,222.68	2,256.15	14,439,932.01	1,725,461.61	39.76122697	-80.69737500
15,900.00	89.00	150.49	11,156.73	-3,309.70	2,305.40	14,439,845.00	1,725,510.86	39.76098756	-80.69720078
16,000.00	89.00	150.49	11,158.48	-3,396.71	2,354.65	14,439,757.99	1,725,560.11	39.76074814	-80.69702657
16,100.00	89.00	150.49	11,160.23	-3,483.72	2,403.91	14,439,670.98	1,725,609.37	39.76050873	-80.69685236
16,200.00	89.00	150.49	11,161.97	-3,570.73	2,453.16	14,439,583.97	1,725,658.62	39.76026931	-80.69667815
16,300.00	89.00	150.49	11,163.72	-3,657.74	2,502.41	14,439,496.95	1,725,707.87	39.76002989	-80.69650394
16,400.00	89.00	150.49	11,165.47	-3,744.76	2,551.67	14,439,409.94	1,725,757.13	39.75979048	-80.69632973
16,500.00	89.00	150.49	11,167.22	-3,831.77	2,600.92	14,439,322.93	1,725,806.38	39.75955106	-80.69615553
16,600.00	89.00	150.49	11,168.96	-3,918.78	2,650.17	14,439,235.92	1,725,855.63	39.75931164	-80.69598132
16,700.00	89.00	150.49	11,170.71	-4,005.79	2,699.42	14,439,148.91	1,725,904.89	39.75907222	-80.69580712
16,800.00	89.00	150.49	11,172.46	-4,092.80	2,748.68	14,439,061.89	1,725,954.14	39.75883281	-80.69563291
16,900.00	89.00	150.49	11,174.21	-4,179.82	2,797.93	14,438,974.88	1,726,003.39	39.75859339	-80.69545871
17,000.00	89.00	150.49	11,175.96	-4,266.83	2,847.18	14,438,887.87	1,726,052.64	39.75835397	-80.69528451
17,100.00	89.00	150.49	11,177.70	-4,353.84	2,896.44	14,438,800.86	1,726,101.90	39.75811455	-80.69511031
17,200.00	89.00	150.49	11,179.45	-4,440.85	2,945.69	14,438,713.85	1,726,151.15	39.75787513	-80.69493612
17,300.00	89.00	150.49	11,181.20	-4,527.86	2,994.94	14,438,626.83	1,726,200.40	39.75763571	-80.69476192
17,400.00	89.00	150.49	11,182.95	-4,614.88	3,044.20	14,438,539.82	1,726,249.66	39.75739629	-80.69458772
17,500.00	89.00	150.49	11,184.69	-4,701.89	3,093.45	14,438,452.81	1,726,298.91	39.75715687	-80.69441353
17,600.00	89.00	150.49	11,186.44	-4,788.90	3,142.70	14,438,365.80	1,726,348.16	39.75691745	-80.69423934
17,700.00	89.00	150.49	11,188.19	-4,875.91	3,191.96	14,438,278.79	1,726,397.42	39.75667803	-80.69406514
17,800.00	89.00	150.49	11,189.94	-4,962.92	3,241.21	14,438,191.77	1,726,446.67	39.75643861	-80.69389095
17,900.00	89.00	150.49	11,191.68	-5,049.94	3,290.46	14,438,104.76	1,726,495.92	39.75619919	-80.69371676
18,000.00	89.00	150.49	11,193.43	-5,136.95	3,339.71	14,438,017.75	1,726,545.17	39.75595977	-80.69354257
18,100.00	89.00	150.49	11,195.18	-5,223.96	3,388.97	14,437,930.74	1,726,594.43	39.75572035	-80.69336839
18,200.00	89.00	150.49	11,196.93	-5,310.97	3,438.22	14,437,843.73	1,726,643.68	39.75548093	-80.69319420
18,300.00	89.00	150.49	11,198.67	-5,397.98	3,487.47	14,437,756.71	1,726,692.93	39.75524151	-80.69302002
18,400.00	89.00	150.49	11,200.42	-5,485.00	3,536.73	14,437,669.70	1,726,742.19	39.75500209	-80.69284583
18,500.00	89.00	150.49	11,202.17	-5,572.01	3,585.98	14,437,582.69	1,726,791.44	39.75476266	-80.69267165
18,600.00	89.00	150.49	11,203.92	-5,659.02	3,635.23	14,437,495.68	1,726,840.69	39.75452324	-80.69249747
18,700.00	89.00	150.49	11,205.67	-5,746.03	3,684.49	14,437,408.67	1,726,889.95	39.75428382	-80.69232329
18,800.00	89.00	150.49	11,207.41	-5,833.04	3,733.74	14,437,321.65	1,726,939.20	39.75404443	-80.69214911
18,900.00	89.00	150.49	11,209.16	-5,920.06	3,782.99	14,437,234.64	1,726,988.45	39.75380497	-80.69197493
19,000.00	89.00	150.49	11,210.91	-6,007.07	3,832.24	14,437,147.63	1,727,037.70	39.75356555	-80.69180076
19,100.00	89.00	150.49	11,212.66	-6,094.08	3,881.50	14,437,060.62	1,727,086.96	39.75332612	-80.69162658
19,200.00	89.00	150.49	11,214.40	-6,181.09	3,930.75	14,436,973.61	1,727,136.21	39.75308670	-80.69145241
19,300.00	89.00	150.49	11,216.15	-6,268.10	3,980.00	14,436,886.59	1,727,185.46	39.75284728	-80.69127823
19,400.00	89.00	150.49	11,217.90	-6,355.12	4,029.26	14,436,799.58	1,727,234.72	39.75260785	-80.69110406
19,500.00	89.00	150.49	11,219.65	-6,442.13	4,078.51	14,436,712.57	1,727,283.97	39.75236843	-80.69092989
19,600.00	89.00	150.49	11,221.39	-6,529.14	4,127.76	14,436,625.56	1,727,333.22	39.75212900	-80.69075572
19,700.00	89.00	150.49	11,223.14	-6,616.15	4,177.02	14,436,538.55	1,727,382.48	39.75188957	-80.69058156
19,800.00	89.00	150.49	11,224.89	-6,703.16	4,226.27	14,436,451.53	1,727,431.73	39.75165015	-80.69040739
19,900.00	89.00	150.49	11,226.64	-6,790.18	4,275.52	14,436,364.52	1,727,480.98	39.75141072	-80.69023322
20,000.00	89.00	150.49	11,228.38	-6,877.19	4,324.77	14,436,277.51	1,727,530.23	39.75117130	-80.69005906



Database: DB_Jul2216dt_v14 lt
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Knob Creek
 Well: Knob Creek S-15HU (slot O)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Knob Creek S-15HU (slot O)
 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

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,100.00	89.00	150.49	11,230.13	-6,964.20	4,374.03	14,436,190.50	1,727,579.49	39.75093187	-80.68988490
20,200.00	89.00	150.49	11,231.88	-7,051.21	4,423.28	14,436,103.49	1,727,628.74	39.75069244	-80.68971073
20,300.00	89.00	150.49	11,233.63	-7,138.22	4,472.53	14,436,016.47	1,727,677.99	39.75045302	-80.68953657
20,400.00	89.00	150.49	11,235.38	-7,225.24	4,521.79	14,435,929.46	1,727,727.25	39.75021359	-80.68936241
20,500.00	89.00	150.49	11,237.12	-7,312.25	4,571.04	14,435,842.45	1,727,776.50	39.74997416	-80.68918826
20,600.00	89.00	150.49	11,238.87	-7,399.26	4,620.29	14,435,755.44	1,727,825.75	39.74973473	-80.68901410
20,700.00	89.00	150.49	11,240.62	-7,486.27	4,669.55	14,435,668.43	1,727,875.01	39.74949531	-80.68883994
20,800.00	89.00	150.49	11,242.37	-7,573.28	4,718.80	14,435,581.41	1,727,924.26	39.74925588	-80.68866579
20,900.00	89.00	150.49	11,244.11	-7,660.30	4,768.05	14,435,494.40	1,727,973.51	39.74901645	-80.68849163
21,000.00	89.00	150.49	11,245.86	-7,747.31	4,817.30	14,435,407.39	1,728,022.76	39.74877702	-80.68831748
21,065.16	89.00	150.49	11,247.00	-7,804.01	4,849.40	14,435,350.69	1,728,054.86	39.74862100	-80.68820400

PBHL/TD 21065.16 MD 11247.00 TVD

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KC Ten High S-15HU LF - hit/miss target - Shape	0.00	0.00	11,084.00	311.16	205.77	14,443,465.86	1,723,411.23	39.77095066	-80.70462953
- plan misses target center by 43.50usft at 11713.86usft MD (11083.15 TVD, 332.71 N, 243.55 E)									
- Point									
KC Ten High S-15HU LF - plan misses target center by 0.04usft at 11738.64usft MD (11084.01 TVD, 311.19 N, 255.81 E)	0.00	0.01	11,084.00	311.16	255.77	14,443,465.86	1,723,461.23	39.77095021	-80.70445159
- Point									
KC Ten High S-15HU Bf - plan hits target center - Point	0.00	0.00	11,247.00	-7,804.01	4,849.40	14,435,350.69	1,728,054.86	39.74862100	-80.68820400

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,100.00	3,100.00	0.00	0.00	KOP Begin 2°/100' build
3,300.00	3,299.84	6.68	-2.03	Begin 4.00° tangent section
4,050.00	4,048.01	56.74	-17.21	Begin 2°/100' drop
4,250.00	4,247.85	63.42	-19.23	Begin vertical hold section
8,002.15	8,000.00	63.42	-19.23	Begin 3°/100' build
9,116.98	9,052.59	365.96	-111.30	Begin 33.44° tangent section
9,877.47	9,687.16	766.94	-233.31	Begin 6°/100' build/turn
11,244.73	10,914.16	693.41	11.90	Begin 8°/100' build/turn
11,738.65	11,084.01	311.18	255.81	Begin 89.00° lateral section
21,065.16	11,247.00	-7,804.01	4,849.40	PBHL/TD 21065.16 MD 11247.00 TVD

WW-9
(4/16)

4705102289

API Number 47 - 051 -
Operator's Well No. Knob Creek S-15HU

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

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Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal OCT - 2 2019

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

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Environmental Protection

Additives to be used in drilling medium? Barite for weight

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

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

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

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

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

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

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

Subscribed and sworn before me this 26 day of SEPTEMBER, 2019

Maureen A Stead

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

My commission expires 1/28/23

4705102289

Form WW-9

Operator's Well No. Knob Creek S-15HU

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *John Anderson*

Comments:

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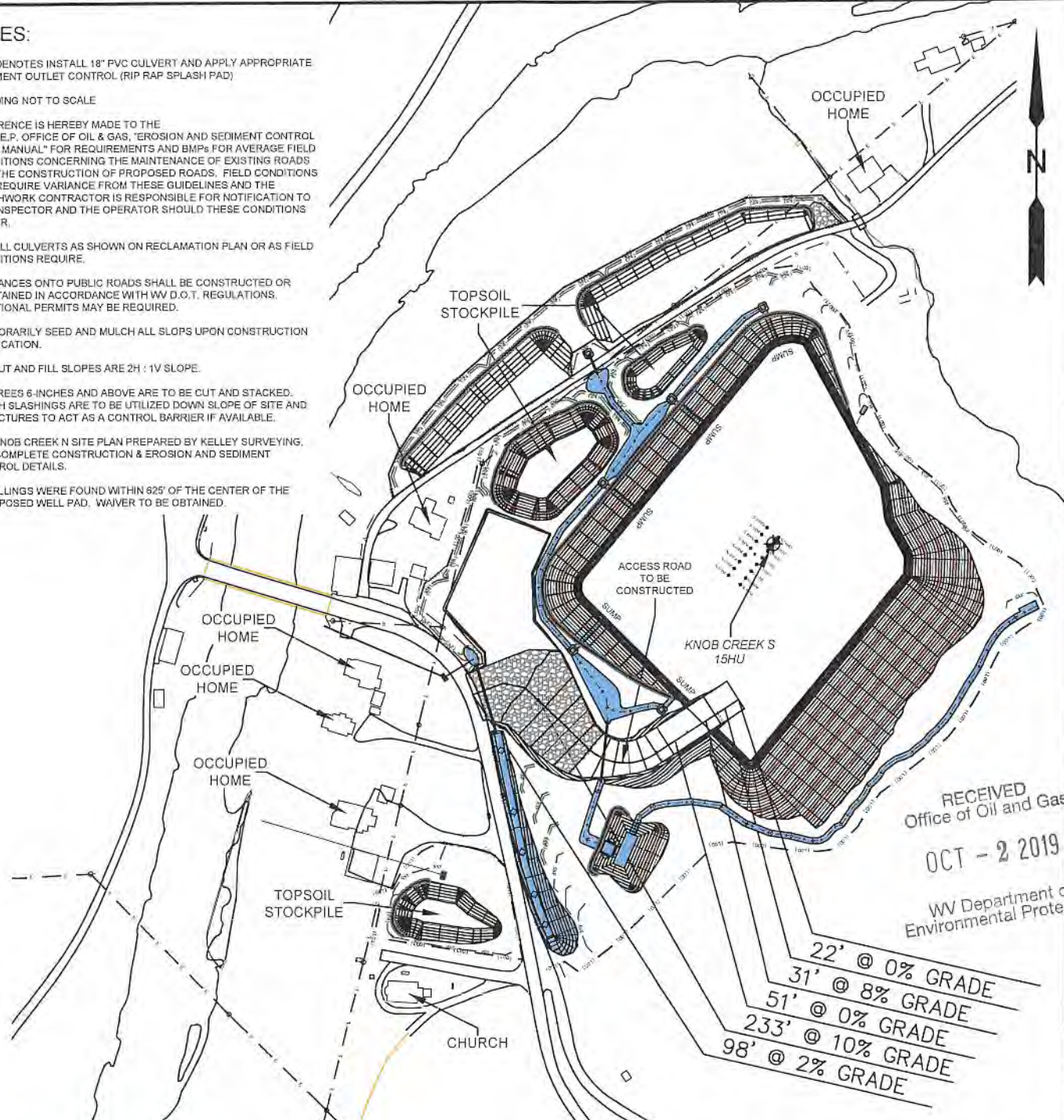
Title: WVDEP Oil and Gas Inspector Date: 9/27/19

Field Reviewed? (2) Yes () No

PROPOSED KNOB CREEK S - 15HU

NOTES:

1. - DENOTES INSTALL 18" FVC 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 825' 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

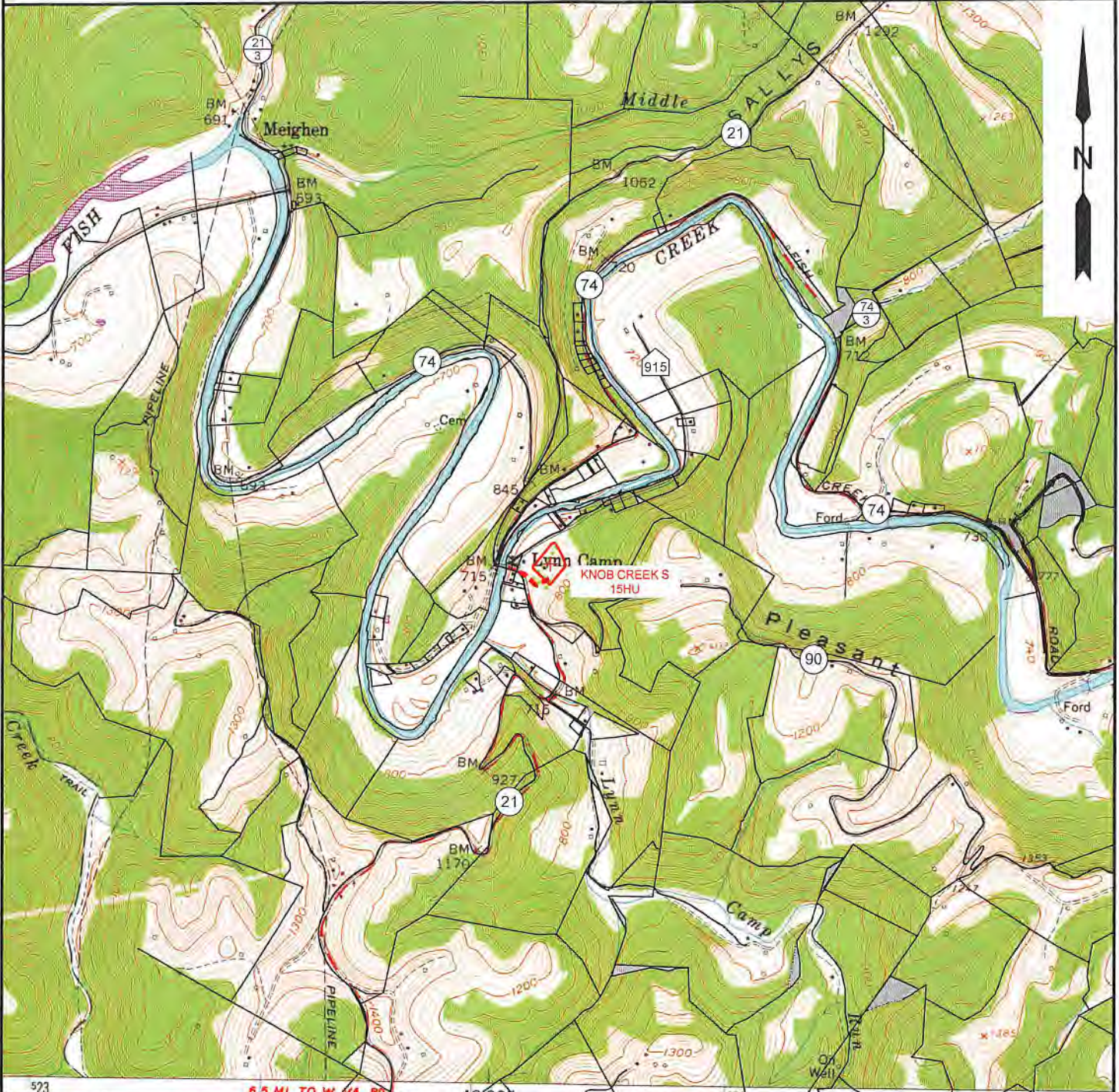
***** SILT FENCE AND/OR SEDIMENT AND EROSION CONTROL MEASURE.

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 180 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5674
www.sls-wv.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	09/27/2019	NONE

TUG HILL
OPERATING

PROPOSED KNOB CREEK S - 15HU



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.

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5934
www.slsww.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	09/27/2019	1" = 2000'

TUG HILL
OPERATING

4705102289



Well Site Safety Plan
Tug Hill Operating, LLC

09/22/19

Well Name: Knob Creek N-15HU

Pad Location: Knob Creek
Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

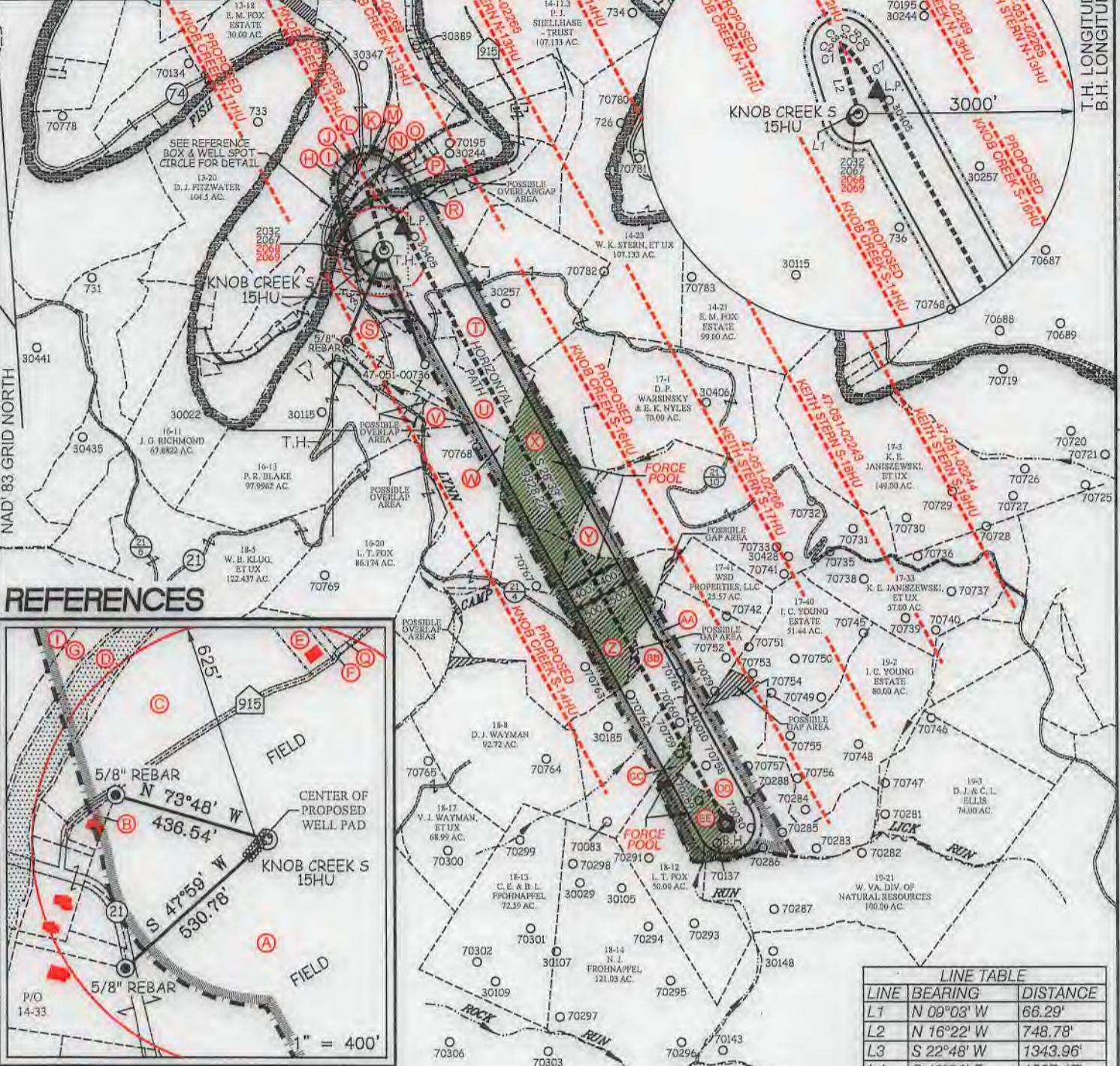
NORTHING - 4,402,282.36

EASTING - 525,234.08

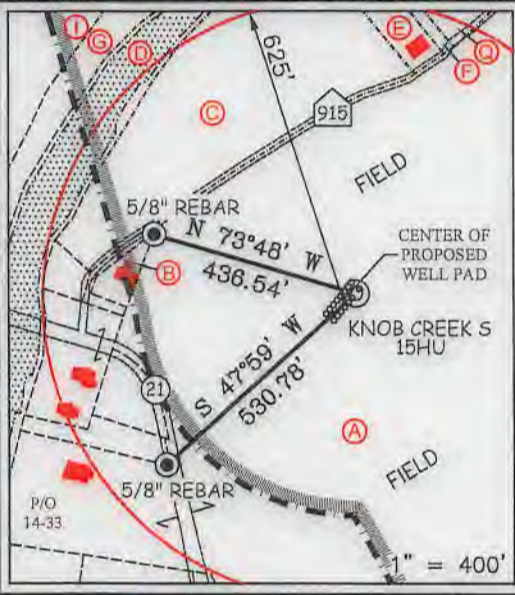
September 2019

RECEIVED
Office of Oil and Gas
OCT - 2 2019
WV Department of
Environmental Protection

**KNOB CREEK S LEASE
UTICA UNIT - 292.62 AC±
WELL 15HU
TUG HILL OPERATING**



REFERENCES



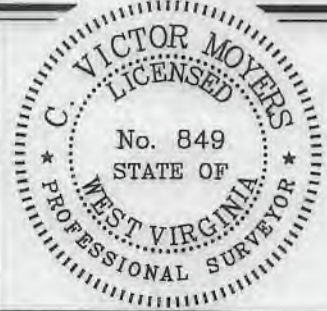
LINE	BEARING	DISTANCE
L1	N 09°03' W	66.29'
L2	N 16°22' W	748.78'
L3	S 22°48' W	1343.96'
L4	S 19°36' E	1667.17'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	105.33'	530.99'	N 10°59' W	105.16'
C2	36.84'	112.82'	N 05°26' E	36.67'
C3	22.87'	25.90'	N 42°50' E	22.14'
C4	27.05'	43.78'	S 80°27' E	26.62'
C5	63.89'	236.87'	S 53°36' E	63.70'
C6	161.69'	1111.48'	S 41°27' E	161.54'
C7	557.59'	3534.10'	S 32°32' E	557.01'

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Land & Energy Development
Solutions from the ground up.
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www.slsllc.com

P.S. 849 *C. Victor Moyers*

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD'83 S.P.C.(FT)	N. 464,881.79	E. 1,629,700.56	
NAD'83 GEO.	LAT-(N) 39.770098	LONG-(W) 80.705365	
NAD'83 UTM (M)	N. 4,402,282.36	E. 525,234.08	
LANDING POINT			
NAD'83 S.P.C.(FT)	N. 465,188.7	E. 1,629,961.6	
NAD'83 GEO.	LAT-(N) 39.770950	LONG-(W) 80.704451	
NAD'83 UTM (M)	N. 4,402,377.2	E. 525,312.0	
BOTTOM HOLE			
NAD'83 S.P.C.(FT)	N. 456,995.2	E. 1,634,420.5	
NAD'83 GEO.	LAT-(N) 39.748621	LONG-(W) 80.688204	
NAD'83 UTM (M)	N. 4,399,903.7	E. 526,712.2	



SCALE 1" = 2000' FILE NO. 8789P15HU.dwg
 DATE OCTOBER 1, 2019
 REVISED _____
 OPERATORS WELL NO. KNOB CREEK S-15HU
 API WELL NO. 47 051 02289 WGA
 NO. STATE COUNTY PERMIT

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

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

LEGEND

- UNIT BOUNDARY
- LEASED TRACTS INSIDE
- UNIT BOUNDARY
- SURFACE LINE
- PROPOSED UTICA
- WELL LATERAL
- 400' OFFSET LINE
- 500' OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- FORCE POOL TRACT
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE ADDITIONAL SHEETS)

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

**KNOB CREEK S LEASE
UTICA UNIT - 292.62 AC±
WELL 15HU
TUG HILL OPERATING**

B.H.

T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°45'00"

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

NAD'83 S.P.C.(FT)	N. 464,881.79	E. 1,629,700.56
NAD'83 GEO.	LAT-(N) 39.770098	LONG-(W) 80.705365
NAD'83 UTM (M)	N. 4,402,282.36	E. 525,234.08
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 465,188.7	E. 1,629,961.6
NAD'83 GEO.	LAT-(N) 39.770950	LONG-(W) 80.704451
NAD'83 UTM (M)	N. 4,402,377.2	E. 525,312.0
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 456,995.2	E. 1,634,420.5
NAD'83 GEO.	LAT-(N) 39.748621	LONG-(W) 80.688204
NAD'83 UTM (M)	N. 4,399,903.7	E. 526,712.2

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

503' B.H.

7,857' T.H.

TAG	SURFACE OWNER	PARCEL	ACRES
A	DAVID LEE FRANKLIN	9-14-33	65.824
B	MARGARET FOX - LIFE	9-14-39	8,675 SQ. FT
C	DAVID LEE FRANKLIN	9-14-44	2.913
D	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
E	TWILA C. COFFIELD	9-14-32	0.583
F	TWILA C. COFFIELD	9-14-32.1	0.184
G	JOHN C. LAGOS, ET UX	9-14-42	1.87
H	JAMES G. FOX	9-14-43	0.66
I	MARGARET FOX - LIFE	9-13-13	15.513
J	NILA JEAN FROHNAPPEL	9-13-12	91.1007
K	MARGARET K. FOX - LIFE	9-13-14	3.00
L	MARGARET K. FOX - LIFE	9-14-46	18.888
M	JAMES E. PEELMAN	9-14-53	0.555
N	JAMES E. PEELMAN	9-14-52	0.439
O	GEORGE R. TAYLOR, ET UX	9-14-51	1.621
P	GEORGE R. TAYLOR, ET UX	9-14-44.1	4.423
Q	RICHARD L. HARVETH, ET UX	9-14-54	1.649
R	WILFORD F. NELSON, JR., ET UX	9-14-31	0.954
S	ERIC J. YOUNG	9-16-15.1	1.98
T	JOHN F. CUNNINGHAM, ET UX	9-14-22	75.22
U	RONALD R. YOUNG, ET UX - LIFE	9-16-15	52.02
V	ROBIN D. & DAVID G. STEWART	9-16-18.1	3.333
W	ALICE FAYE WINLAND	9-16-18	48.667
X	ALICE FAYE WINLAND	9-16-19	75.00
Y	I. C. YOUNG ESTATE	9-17-2	140.00
Z	ROBERT J. COMBS, ET AL	9-18-9	110.75
AA	BETTY J. GOULDSBERRY ESTATE, ET AL	9-18-10	20.00
BB	BETTY J. GOULDSBERRY ESTATE, ET AL	9-18-11	60.00
CC	LOUIS T. FOX	9-18-12	50.00
DD	I. C. YOUNG ESTATE	9-19-1	80.00
EE	LOUIS T. FOX	9-19-19.1	21.68

T.H.

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.
- PROPOSED LATERAL OR TOP HOLE OF KNOB CREEK S-15HU IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF EXISTING WELLS PROPOSED KNOB CREEK N-11HU, KNOB CREEK N-12HU (47-051-02268), KNOB CREEK N-13HU (47-051-02269), PROPOSED KNOB CREEK S-14HU, PROPOSED KNOB CREEK S-16HU, KEITH STERN N-13HU (47-051-02265), KEITH STERN S-17HU (47-051-02266).



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 OCTOBER 1, 20 19
REVISED _____
OPERATORS WELL NO. KNOB CREEK S-15HU
API WELL NO. 47 051 02269 Deep H10A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8789P15HU.dwg
KNOB CREEK S-15HU REV4
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



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

LOCATION: GROUND = 729.90' 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 ADDITIONAL SHEETS ACREAGE 65.824±

PROPOSED WORK: LEASE NO. SEE ADDITIONAL SHEETS
DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT
ESTIMATED DEPTH TVD: 11,315' TMD: 21,065'

COUNTY NAME

PERMIT

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

WW-6A1
(5/13)

Operator's Well No. Knob Creek S-15HU

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

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

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

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
-------------------------	-----------------------	-----------------------	---------	-----------

*See attached 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 

Its: Permitting Specialist - Appalachia Region

Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*22601	9-16-19	X	SOUTH EASTERN LIEUTENANCY OF THE HOLY SEPULCHRE OF JERUSALEM	TH EXPLORATION LLC	1/8+	966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22814	9-16-19	X	TERRY J SCOTT	TH EXPLORATION LLC	1/8+	972	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*25112	9-16-19	X	JOHN V AND RACHEL M SHEPHERD	TG STILES	1/8+	63	N/A	Hope Natural Gas Company to Consolidated Gas Supply Corporation: 374/234	Consolidated Gas Supply Corporation to Consolidated Gas Transmission Corporation: 505/406	Consolidated Gas Transmission Corp. to CNG Development Co: 515/88	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15910	9-17-2	Y	SHIRLEY KOONTZ	CHESAPEAKE APPALACHIA LLC	1/8+	701	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15911	9-17-2	Y	ROBERT W. GRAY	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15912	9-17-2	Y	DELORES I RICHTER	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15913	9-17-2	Y	LILIA MCGUIRE	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15914	9-17-2	Y	JUDY CALLOWAY	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15915	9-17-2	Y	JUDY WARNER	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15916	9-17-2	Y	CHRISTI LYNN CLAYTON	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15917	9-17-2	Y	CINDY LOU SMITH	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710
10*15918	9-17-2	Y	ARTHUR EMORY	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/67	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710	Chesapeake Appalachia LLC to SWN Production Company: 33/710

Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*15919	9-17-2	Y	CAROLYN SUE HENRY	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 36/455
10*15920	9-17-2	Y	DENNIS KOTKE	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 36/455
10*17283	9-17-2	Y	TIMOTHY MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	713	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17284	9-17-2	Y	GAREN P. MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	716	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17285	9-17-2	Y	WINONA RIDDLE	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17286	9-17-2	Y	TEXYN L. MILLER	CHESAPEAKE APPALACHIA LLC	1/8+	716	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17287	9-17-2	Y	JENNIFER WHEATON	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17288	9-17-2	Y	LISA ANN MCDOWELL	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17289	9-17-2	Y	ANITA DAE MILLER	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 24/204	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256
10*17240	9-17-2	Y	BONNIE GRISELL	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore SWN Production Company LLC to TH Exploration LLC: 41/256

Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*18656	9-17-2	Y	PAMELA CALL	TH EXPLORATION LLC	1/8+	936	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18658	9-17-2	Y	ELIZABETH JANE KELLER	TH EXPLORATION LLC	1/8+	936	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18762	9-17-2	Y	TRACY L BARRETT	TH EXPLORATION LLC	1/8+	938	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19373	9-17-2	Y	JESSICA WHEATON	TH EXPLORATION LLC	1/8+	411	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19408	9-17-2	Y	CAROLYN J YOUNG	TH EXPLORATION LLC	1/8+	940	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19508	9-17-2	Y	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	941	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19632	9-17-2	Y	CYNTHIA K KIRCHHOFF	TH EXPLORATION LLC	1/8+	942	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19618	9-17-2	Y	RONALD W YOUNG	TH EXPLORATION LLC	1/8+	937	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19619	9-17-2	Y	ERIC J YOUNG	TH EXPLORATION LLC	1/8+	937	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19620	9-17-2	Y	RONALD R YOUNG AND GERALDINE YOUNG	TH EXPLORATION LLC	1/8+	937	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19624	9-17-2	Y	JOHN T YINGLING	TH EXPLORATION LLC	1/8+	944	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19668	9-17-2	Y	MELISSA D FLETCHER & SCOTT A FLETCHER	TH EXPLORATION LLC	1/8+	938	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19713	9-17-2	Y	MARSHA BENSFORD	TH EXPLORATION LLC	1/8+	944	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19879	9-17-2	Y	MARY V GILSON AND WALTER M GILSON	TH EXPLORATION LLC	1/8+	945	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19933	9-17-2	Y	MARY ANN GRIFFITH	TH EXPLORATION LLC	1/8+	948	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21226	9-17-2	Y	PENNY YODER AND KEVIN LYNN YODER	TH EXPLORATION LLC	1/8+	951	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21342	9-17-2	Y	LELAND SINLAIR YOUNG	TH EXPLORATION LLC	1/8+	946	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21400	9-17-2	Y	DENNIS REASBECK AND BARBARA REASBECK	TH EXPLORATION LLC	1/8+	956	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21487	9-17-2	Y	FLOYD D ANDERSON & CAROLYN SUE ANDERSON	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21488	9-17-2	Y	ALEXA B YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21517	9-17-2	Y	SUSAN C YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21572	9-17-2	Y	CARLA J SIMMS	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21574	9-17-2	Y	Alice F Winland	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21575	9-17-2	Y	MICHAEL S OTT AND SYBIL OTT	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21738	9-17-2	Y	CRYSTAL DAWN YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21741	9-17-2	Y	HOLLY A YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21749	9-17-2	Y	GARY D RICHARDS AND KERRI S RICHARDS	TH EXPLORATION LLC	1/8+	959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21842	9-17-2	Y	JOSEPH MOKOVACH	TH EXPLORATION LLC	1/8+	959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21844	9-17-2	Y	ROBERTA YOUNG	TH EXPLORATION LLC	1/8+	959	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21927	9-17-2	Y	BLACK GOLD GROUP LTD	TH EXPLORATION LLC	1/8+	964	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21928	9-17-2	Y	JOHN D COX AND CONNIE J COX	TH EXPLORATION LLC	1/8+	953	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21940	9-17-2	Y	ALYSHA JORDAN & TERRY M JORDAN	TH EXPLORATION LLC	1/8+	953	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21967	9-17-2	Y	ROGER G ALLEN AND DONNA KAY ALLEN	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21970	9-17-2	Y	CHRISTOPHER DAUGHERTY & JENNIFER R DAUGHERTY	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21971	9-17-2	Y	MARY LOU KITTELBERGER AND FREDERICK W KITTELBERGER	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21975	9-17-2	Y	RAYMOND A KUDERSKI AND KELLI J KUDERSKI	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21984	9-17-2	Y	SANFORD METZ	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21986	9-17-2	Y	RONALD D KOONTZ & BETH ANN KOONTZ	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22052	9-17-2	Y	BRANNEN DAUGHERTY	TH EXPLORATION LLC	1/8+	961	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22088	9-17-2	Y	LARRY R BONAR AND DEBRA L BONAR	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22147	9-17-2	Y	DONALD EUGENE ANDERSON	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22154	9-17-2	Y	BRYANT R SWIFT AND KATHY SWIFT	TH EXPLORATION LLC	1/8+	966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22599	9-17-2	Y	AIDEN ROYD YOUNG JENNIFER A YOUNG, PETITIONER	TH EXPLORATION LLC	1/8+	966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22600	9-17-2	Y	JAMES ROBERT WELLS	TH EXPLORATION LLC	1/8+	970	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22776	9-17-2	Y	NEIL MCELROY AND SUE MASON MCELROY	TH EXPLORATION LLC	1/8+	977	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22849	9-17-2	Y	JOHN J HELSTERN AND LYNN D HELSTERN	TH EXPLORATION LLC	1/8+	977	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22851	9-17-2	Y	RONALD LEE HENSLEY AND MARY ANN HENSLEY	TH EXPLORATION LLC	1/8+	977	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22853	9-17-2	Y	JACK R BERISFORD AKA RANDY BERISFORD	TH EXPLORATION LLC	1/8+	984	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23076	9-17-2	Y	IDA M TRAVIS ET AL DAVID C WHITE AS SPECIAL COMMISSIONER	TH EXPLORATION LLC	1/8+	988	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23260	9-17-2	Y	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23559	9-17-2	Y	THE ESTATE OF RUTH N LUTHER SUZANNE L WOZNAK EXECUTRIX	TH EXPLORATION LLC	1/8+	1009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23668	9-17-2	Y				286											
10*27824	9-18-9	Z	CATHARINE V B YOUNG AND A J YOUNG	J S MASON	1/8+	164	J S Mason to Frnk Marling, 164/571	Frank Marling to Lynn Camp Oil & Gas Company, 164/572	Lynn Camp Oil & Gas Company to Cameron Heat & Light Company, 220/423	Cameron Heat & Light Company to Zogg and Zogg Inc, 227/258	Zogg & Zogg Inc to Gerald Wells, 259/160	Gerald Wells & Hazel Wells to Paul J Klug and E J Klug, 380/359	E J Klug, Paul Klug & Lena Klug to Carl D. Perkins, 453/390	Perkins to Perkins Oil & Gas Inc, 484/281 & 17/593	Perkins Oil & Gas Inc to TH Exploration, LLC, 44/506		
10*15938	9-18-10	AA	MARK W YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	695	157	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc, 23/512	Chesapeake Appalachia LLC to SWN Production Company, 33/110	Statoil USA Onshore Exchange Titleholder LLC, 19/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company, 19/624	SWN Production Company LLC to TH Exploration LLC, 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC, 36/455		

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10*15940	9-18-10	AA	JANICE N HAUDENSCHILT	CHESAPEAKE APPALACHIA LLC	1/8+	695	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15941	9-18-10	AA	NICOLETTA MILICIA BLOODWORTH	CHESAPEAKE APPALACHIA LLC	1/8+	698	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15942	9-18-10	AA	CLARA YOHO	CHESAPEAKE APPALACHIA LLC	1/8+	698	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15943	9-18-10	AA	DANA MILICIA HUMPHREYS	CHESAPEAKE APPALACHIA LLC	1/8+	700	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15944	9-18-10	AA	DEWEY A MILICIA AND ROBIN MILICIA	CHESAPEAKE APPALACHIA LLC	1/8+	700	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15945	9-18-10	AA	HELEN V MCMASTERS AND KENNETH MCMASTERS	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15946	9-18-10	AA	JOSEPH M EMERY	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15947	9-18-10	AA	GERALD ARTHUR EBERT	CHESAPEAKE APPALACHIA LLC	1/8+	703	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15948	9-18-10	AA	GERALD ALLEN EBERT	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15949	9-18-10	AA	CLARENCE W EMERY	CHESAPEAKE APPALACHIA LLC	1/8+	703	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Statoil USA Onshore Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	SWN Production Company LLC to TH Exploration LLC: 36/431	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455

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10*15946	9-18-11	BB	JOSEPH M EMERY	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15947	9-18-11	BB	GERALD ARTHUR EBERT	CHESAPEAKE APPALACHIA LLC	1/8+	703	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15948	9-18-11	BB	GERALD ALLEN EBERT	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15949	9-18-11	BB	CLARENCE W EMERY	CHESAPEAKE APPALACHIA LLC	1/8+	703	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 23/512	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15950	9-18-11	BB	KAREN S GIBSON	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15951	9-18-11	BB	GEORGE R FINNEGAN	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15952	9-18-11	BB	TOM A FINNEGAN	CHESAPEAKE APPALACHIA LLC	1/8+	707	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*15953	9-18-11	BB	GARNET E EMERY	CHESAPEAKE APPALACHIA LLC	1/8+	708	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*17174	9-18-11	BB	JOSHUA EARL YOHO, JR.	CHESAPEAKE APPALACHIA LLC	1/8+	715	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455
10*17175	9-18-11	BB	JANE ELLEN MARCUM	CHESAPEAKE APPALACHIA LLC	1/8+	716	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Chesapeake Appalachia LLC to SWN Production Company: 33/110	Chesapeake Appalachia LLC to SWN Production Exchange Titleholder LLC: 33/424	Merger - SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Statoil USA Onshore Properties Inc to TH Exploration LLC: 36/455

Lease ID	Parcel	Tags	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19619	9-19-1	DD	ERIC J YOUNG	TH EXPLORATION LLC	1/8+	937	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19620	9-19-1	DD	RONALD R YOUNG AND GERALDINE YOUNG	TH EXPLORATION LLC	1/8+	937	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19668	9-19-1	DD	MELISSA D FLETCHER & SCOTT A FLETCHER	TH EXPLORATION LLC	1/8+	938	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21226	9-19-1	DD	PENNY YODER AND KEVIN LYNN YODER	TH EXPLORATION LLC	1/8+	951	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21342	9-19-1	DD	LELAND SINCLAR YOUNG	TH EXPLORATION LLC	1/8+	946	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21488	9-19-1	DD	ALEXA B YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21517	9-19-1	DD	SUSAN C YOUNG	TH EXPLORATION LLC	1/8+	949	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21572	9-19-1	DD	CARLA J SIMMS	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21574	9-19-1	DD	ALICE F WINLAND	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21575	9-19-1	DD	MICHAEL S OTT AND SYBIL OTT	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21738	9-19-1	DD	CRYSTAL DAWN YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21741	9-19-1	DD	HOLLY A YOUNG	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21749	9-19-1	DD	GRANT D RICHARDS AND KERRI S RICHARDS	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22052	9-19-1	DD	RONALD R YOUNG	TH EXPLORATION LLC	1/8+	960	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22147	9-19-1	DD	LARRY R BONAR AND DEBRA L BONAR	TH EXPLORATION LLC	1/8+	957	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22600	9-19-1	DD	AIDEN BOYD YOUNG JENNIFER A YOUNG, PETITIONER	TH EXPLORATION LLC	1/8+	966	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22878	9-19-19-1	EE	SMITH RICHMOND AND BELLE RICHMOND	EDWARD KLUG	1/8+	132	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Co-tenancy utilization -- At least 75% of mineral owners in Tract. At least 75% of the royalty owners have executed a lease on the tract. The interests of the remaining co-tenants were acquired pursuant to the Co-tenancy Modernization and Majority Protection Act.

Assignment: Stone Energy Corp to EGT Corp: 38/75
 Assignment: Perkins Oil & Gas Inc to Stone Energy Corp: 26/322
 Assignment: Carl D Perkins & Dorothy Louise Perkins to Perkins Oil & Gas Inc: 17/593
 Assignment: Paul Klug, Lena Klug, E.J Klug, et al to Carl D Perkins: 453/393
 Assignment: Perkins Oil & Gas Inc to TH Exploration, LLC: 44/506

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASK
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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for review

PARTIAL ASSIGNMENT OF OIL AND GAS LEASES

This **PARTIAL ASSIGNMENT OF OIL AND GAS LEASES** (hereinafter, "**Assignment**"), made the 31 day of May, 2018 (hereinafter, "**Effective Date**"), is by and between **CNX GAS COMPANY LLC**, a Virginia limited liability company, whose address is 1000 CONSOL Energy Drive, Suite 400, Canonsburg, Pennsylvania 15317 (hereinafter "**Assignor**") and **TH EXPLORATION, LLC**, a Texas limited liability company, whose address is 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (hereinafter "**Assignee**"). All references in this Assignment to "**Party**" or "**Parties**" shall be deemed at all times to mean Assignor or Assignee or both. Capitalized terms used but not defined herein shall have the meaning given such terms in the Acreage Trade Agreement, by and between Assignor and Assignee dated April 9, 2018 (the "**ATA**").

WHEREAS, Assignor desires to assign all of Assignor's right, title and interest in and to those Oil and Gas Lease(s) as same may have been previously or will in the future be modified, extended, or amended (hereinafter, "**Lease**" or "**Leases**"), covering certain tracts of land (hereinafter, "**Lands**") located in Marshall County, West Virginia; such Leases and Lands covered thereby being more particularly described on **Exhibit "A"** attached hereto and made a part hereof insofar and only insofar as such Leases cover the Target Formations (as defined below).

NOW, THEREFORE, for and in consideration of TEN AND NO/100 DOLLARS (\$10.00) and other valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor does hereby **GRANT, BARGAIN, ASSIGN, TRANSFER, AND CONVEY** unto Assignee the following "**Assigned Rights**":

- (a) All of Assignor's right, title, and interest in and to those Leases set forth on **Exhibit A** attached hereto **INSOFAR AND ONLY INSOFAR** as to the particular Target Formation(s) (defined below) described and delineated on **Exhibit A** for each Lease:
 - i. "**Target Formation(s)**" means, with respect to each Lease, two hundred feet (200') above the top and two hundred feet (200') below the base of the Marcellus Formation or the Utica Formation or both, as specified for each Lease on **Exhibit A**. For the purposes of this Assignment, the Marcellus Formation shall be defined as the formation commonly known as the Marcellus Shale Formation, with the top of the Marcellus Shale Formation defined as the correlative stratigraphic equivalent to that point found at 6517 feet (6517') measured depth on the Halliburton Simms U-5H Composite_DLL_DEN_NEU Log dated June 14, 2014 (the "**Log**")

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ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "Assignment") is from STATOIL USA ONSHORE PROPERTIES INC., a Delaware corporation ("Assignor"), to TH Exploration, LLC, a Texas limited liability company ("Assignee"), and is executed on August 22, 2016 (the "Effective Date"). Assignor and Assignee may be referred to herein collectively as the "Parties," or individually as a "Party." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated June 19, 2016 (the "Acreage Trade Agreement").

ARTICLE 1
ASSIGNMENT OF ASSETS

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "Leases") INsofar AND ONLY INsofar as they cover the Target Formations and INsofar AND ONLY INsofar as they cover those lands described on Exhibit A (the "Leasehold Rights") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "Conveyed Assets"). Assignor does hereby reserve unto itself the right and subsurface easement to drill through the Leasehold Rights to access the those depths and formations in the Leases other than the Target Formations and (y) to shoot seismic, sonic, or other energy or waves through the Leasehold Rights and to receive, record and evaluate such energy or waves, including those reflected from or in any way pertaining to the reserved depths, and to utilize any and all other exploration technologies that image the subsurface of the leasehold including the reserved depths and to receive, record and evaluate all images resulting therefrom.

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.4 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR WARRANTY, EXPRESS, IMPLIED OR STATUTORY, INCLUDING AS TO (I) TITLE TO THE LEASEHOLD RIGHTS, (II) THE CONTENTS, CHARACTER OR NATURE OF ANY

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ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from SWN PRODUCTION COMPANY, LLC, a Texas limited liability company ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 18, 2017 (the "*Effective Date*"). Assignor and Assignee may be referred to herein collectively as the "*Parties*," or individually as a "*Party*." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated August 24, 2017 (the "*Acreage Trade Agreement*").

**ARTICLE 1
ASSIGNMENT OF ASSETS**

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "*Leases*") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

**ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS**

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR



4705102289

October 1, 2019

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

RE: Knob Creek S-15HU

Subject: CR 21 and 915 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21 and 915 in the area reflected on the Knob Creek S-15HU well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

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

Date of Notice Certification: 10/01/2019

API No. 47- 051 -

Operator's Well No. Knob Creek S-15HU

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>525,234.08</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,282.36</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 style="padding-left: 40px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p align="center">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p align="right">RECEIVED Office of Oil and Gas OCT - 2 2019</p>
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Required Attachments:

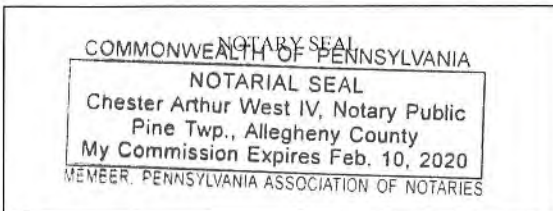
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication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

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - 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 15th day of October 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: 9/30/2019 **Date Permit Application Filed:** 10/1/2019

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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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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WW-6A
(8-13)

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API NO. 47- -
OPERATOR WELL NO. Knob Creek S-15HU
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.**

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)

4705102289

API NO. 47- _____ - _____
OPERATOR WELL NO. Knob Creek S-15HU
Well Pad Name: Knob Creek

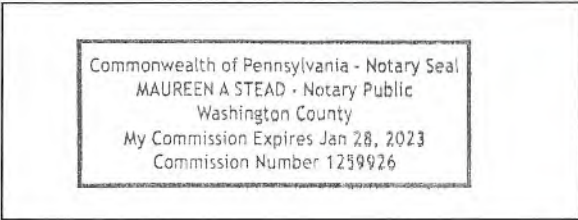
Notice is hereby given by:

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 depprivacyofficer@wv.gov.



Subscribed and sworn before me this 30 day of SEPT., 2019.
Maureen A Stead Notary Public
My Commission Expires 1/28/23

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Exhibit WW-6A

Supplement Pg. 1A

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

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

Well: KNOB CREEK S – 15HU
District: Meade (Residence #'s 1-12, 14-26) (Church #13)
State: WV

There are twenty-five (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>Residence # 1 TM 14 Pcl. 39 Margaret 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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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<p>Residence # 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>Residence # 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>Residence # 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>Church # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 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>Residence # 23 TM 14 Pcl. 37 Margaret 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>Residence # 24 TM 14 Pcl. 37 Margaret 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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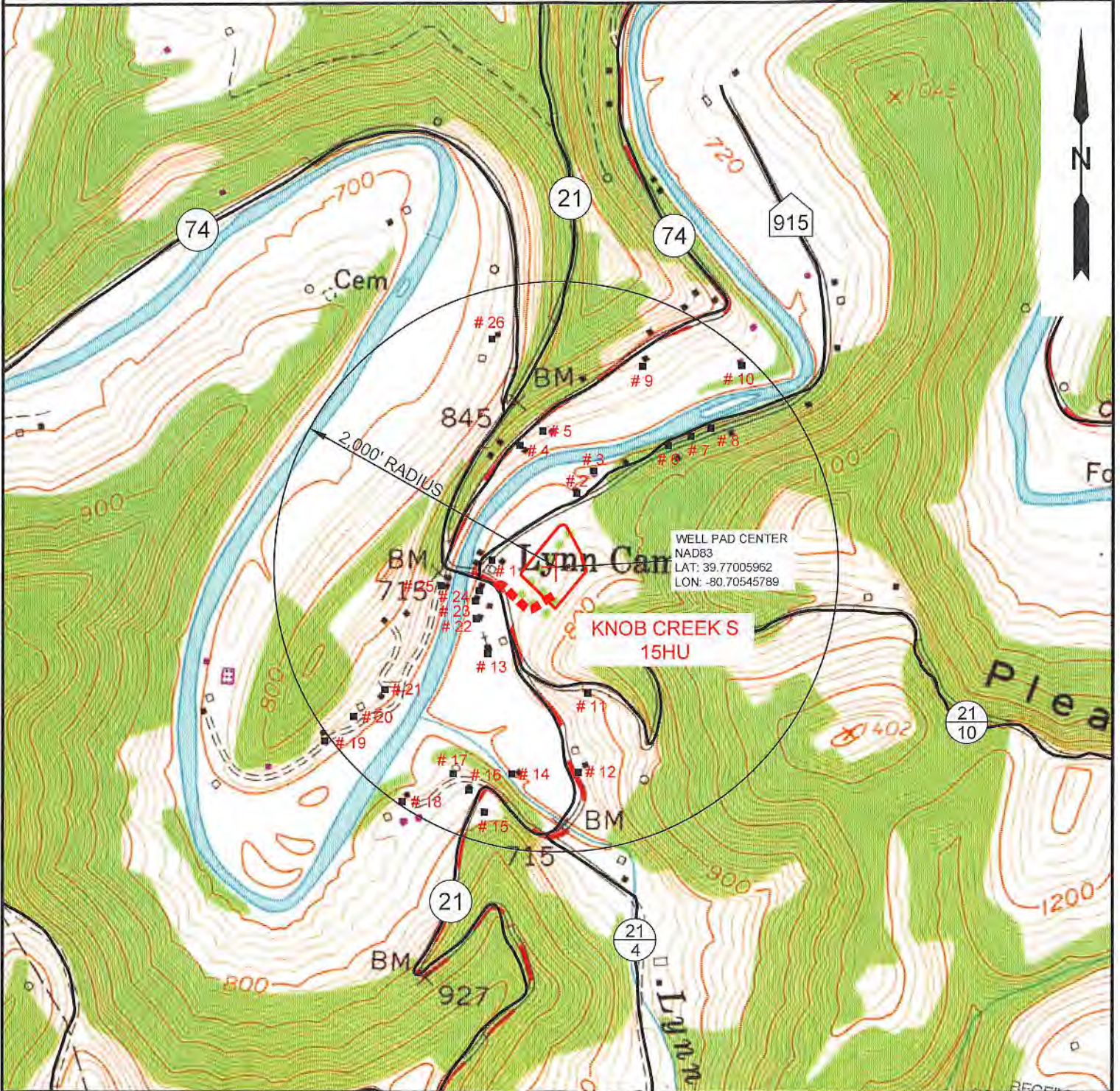
WV Department of
Environmental Protection

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<p>Residence # 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>Residence # 26 TM 13 Pcl. 12 Nila Jean Prohnappel 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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PROPOSED KNOB CREEK S - 15HU 4705102289



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

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www.slsww.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	09/27/2019	1" = 1000'

WV Department of
Environmental Protection
TUG HILL
OPERATING

WW-6A3
(1/12)

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.

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

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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.

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WW-6A5
(1/12)

Operator Well No. Knob Creek S-15HU

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: 10/01/2019 **Date Permit Application Filed:** 10/01/2019

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
Address: 131 Saint Joseph Road
Glen Easton, WV 26039

Name: _____
Address: _____

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: West Virginia UTM NAD 83 Easting: 525,234.08
County: Marshall Northing: 4,402,282.36
District: Meade Public Road Access: St. Joseph Road - CR 21
Quadrangle: Glen Easton 7.5' Generally used farm name: David Lee Franklin
Watershed: Fish Creek (HUC 10)

This Notice Shall Include:

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

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

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

Oil and Gas Privacy Notice:

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

RECEIVED
Office of Oil and Gas
OCT - 2 2019
Environmental Protection

TUG HILL OPERATING LLC
SUSANNE DELIERE
390 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG PA 15317

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:

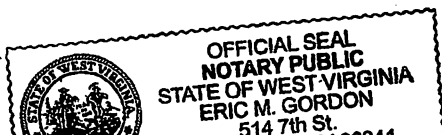
County of Marshall, to-wit:

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

LIMITED POWER OF ATTORNEY

That I, Linda 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 Linda 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.

Linda Lee Franklin (SEAL)

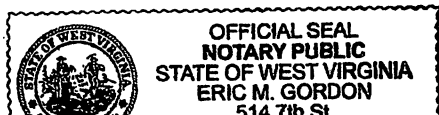
STATE OF West Virginia :
County of Marshall , to-wit:

The foregoing instrument was acknowledged before me this 29th day of March , 2018, by Linda 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

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)

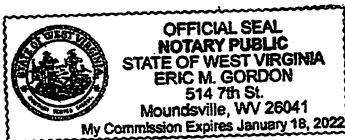
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

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.

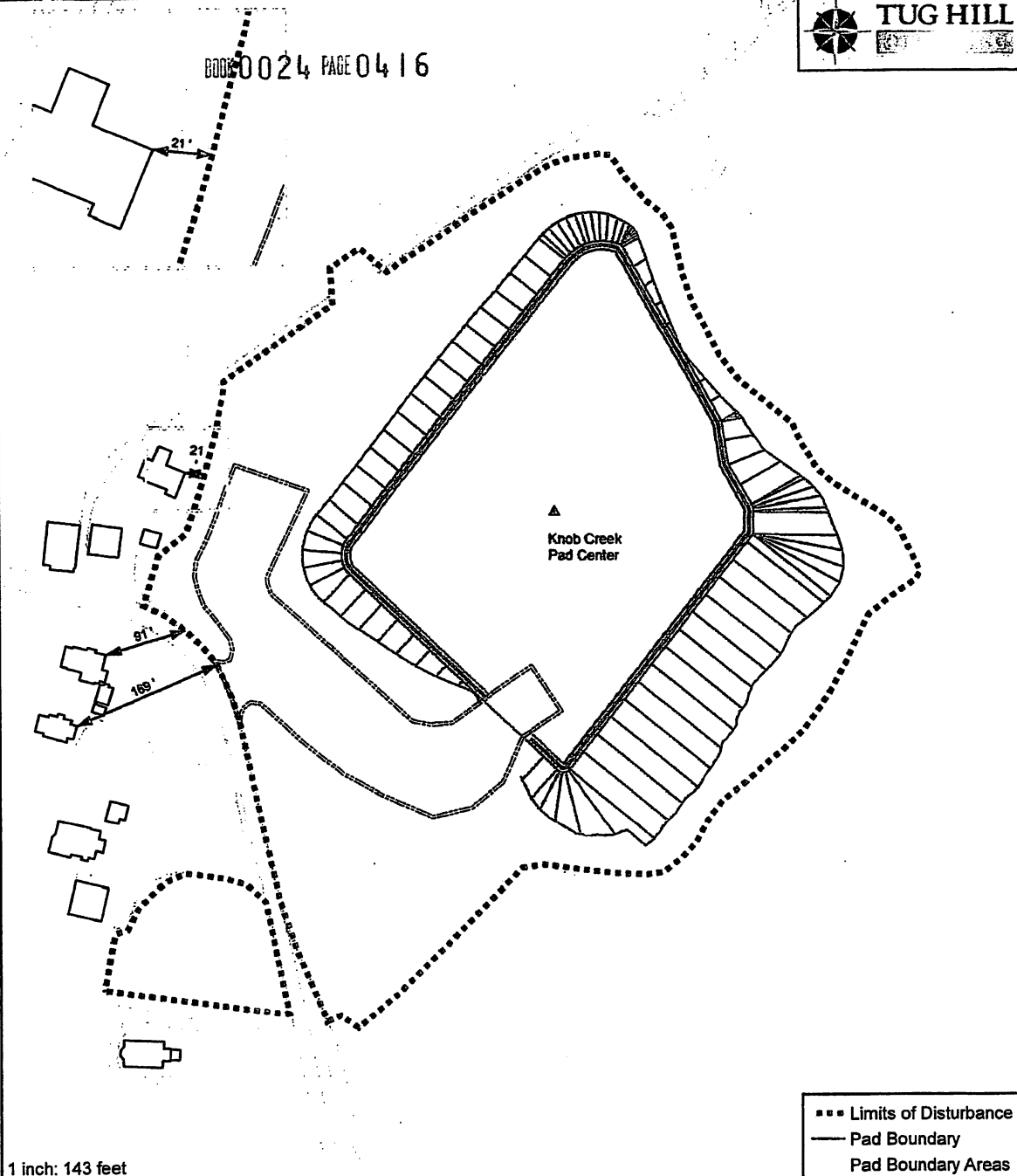
(NOTARY SEAL/STAMP REQUIRED)



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

Marshall County
Jan Pest, Clerk
Instrument 1439957
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 415
Pages Recorded 3
Recording Cost \$



▲ Knob Creek Pad Center

... Limits of Disturbance
 — Pad Boundary
 Pad Boundary Areas

1 inch: 143 feet

0 35 70 140
Feet

N

NOTE: THE APPROVED SITE LOCATION FOR THE
DRAINAGE SITE LOCATED SHOWN NORTH OF WAY AND THE
LOCATION OF THE PROPERTY TO BE REGULATED ARE
LOCATED ON THE MAP. THE PROPERTY TO BE REGULATED
LOCATIONS SHOWN AS THIS COURT IS NOT AN EXACT
REPRESENTATION OF THE ACTUAL PROPERTY LINE. THE
BOUNDARY AND LOCATION OF THE PROPERTY TO BE
REGULATED ARE SHOWN AS THE BEST AS FILED IN
THE COURT RECORDS AND THE APPROVED SITE
LOCATION FOR THE DRAINAGE IS SHOWN AS THE
LOCATION OF ANY OTHER BEING LOCATED IN THE
COURT RECORDS.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Name: Mark H. Fox 3-24-18
 Name: Thomas John Fox



Date: 3/2/2018
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 1st 3-30-18
Thomas John Fox 3-31-18

TUG HILL OPERATING LLC
SUSANNE DELIERE
380 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG PA 15317

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)

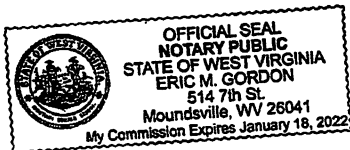
STATE OF West Virginia:
County of Marshall, to-wit:

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

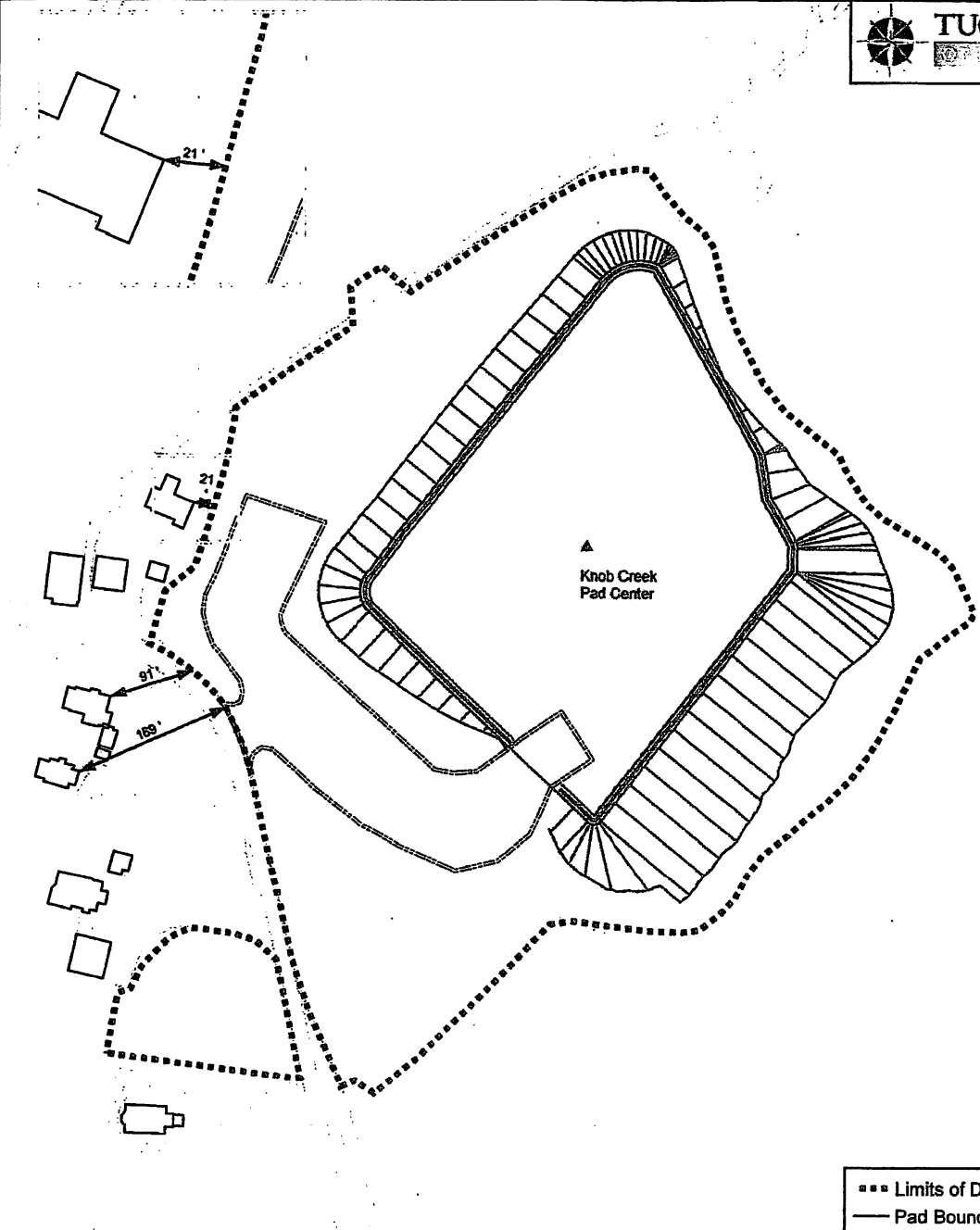
(NOTARY SEAL/STAMP REQUIRED)



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

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

Marshall County
Jan Pest, Clerk
Instrument 1439960
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 424
Pages Recorded 3
Recording Cost \$ 11.00



--- Limits of Disturbance
 — Pad Boundary
 ▨ Pad Boundary Areas

1 inch: 143 feet

0 35 70 140
 Feet

NOTE: THE APPROVED SITE LOCATION FOR THE OUTSIDE SITE ACCESS ROAD, BOUNDARY OF PAD AND THE LOCATION OF THE PROPERTY ON PARCELS AREAS CONSTITUTE AN APPROVED PROJECT. THE LOCATION OF THE PROPERTY ON PARCELS AREAS CONSTITUTE AN APPROVED PROJECT. THE LOCATION OF THE PROPERTY ON PARCELS AREAS CONSTITUTE AN APPROVED PROJECT. THE LOCATION OF THE PROPERTY ON PARCELS AREAS CONSTITUTE AN APPROVED PROJECT.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Mark H. Fox 3-24-18

Name: Mark H. Fox

Name: Thomas John Fox



Date: 3/2/2018
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 24 2018
 Thomas John Fox 3-31-18

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)

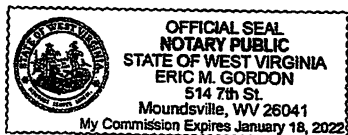
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

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)



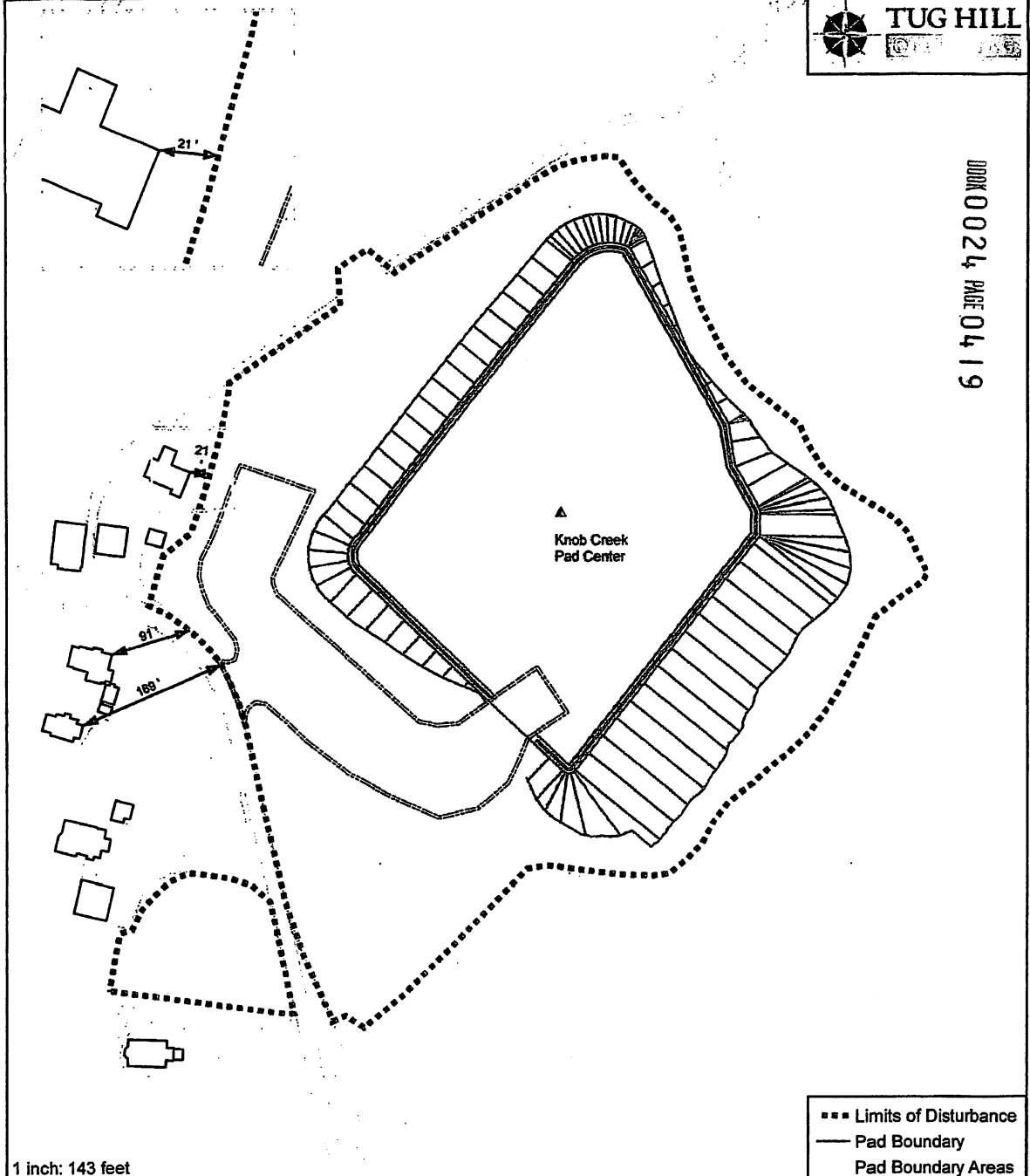
Notary Public for the aforesaid County and/or State

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

Marshall County
Jan Pest, Clerk
Instrument 1439959
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 421
Pages Recorded 3
Recording Cost \$ 11.00



- - - Limits of Disturbance
 — Pad Boundary
 - - - Pad Boundary Areas

1 inch: 143 feet

0 35 70 140
 Feet
 N
NOTE: THIS APPROVED SITE LOCATION FOR THE DAMAGED OR ACCESS ROAD, SHOWS THE LOCATION OF THE PROPERTY OR PROJECTS AS OCCASIONALLY SHOWN ABOVE. LOCATIONS SHOWN AS NOT IDENTIFIED OR UNLOCATED ARE NOT TO BE CONSIDERED AS PART OF THE PROJECT. THE ACTUAL PROPERTY OR PROJECTS ARE TO BE DETERMINED BY THE FIELD OFFICE. THE LOCATION FOR THE DAMAGE OR ACCESS ROAD SHOULD BE DETERMINED BY THE FIELD OFFICE. THE LOCATION FOR THE DAMAGE OR ACCESS ROAD SHOULD BE DETERMINED BY THE FIELD OFFICE.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Paul H. Fox 3-24-18
 Name: [Signature]
 Name: Thomas J. Fox



Date: 3/8/2018
 PCS: NAD 1983 UTM Zone 17N FootUS

Mark H. Fox 3-24-18

May 24 2018
 Thomas J. Fox 3-31-18

TUG HILL OPERATING LLC
SUSANNE DELIERE
380 SOUTHPOINTE BLVD
SUITE 200
CANDONSBURG PA 15317

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)

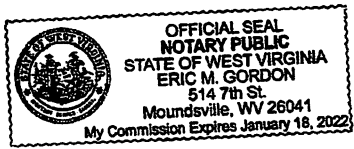
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

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

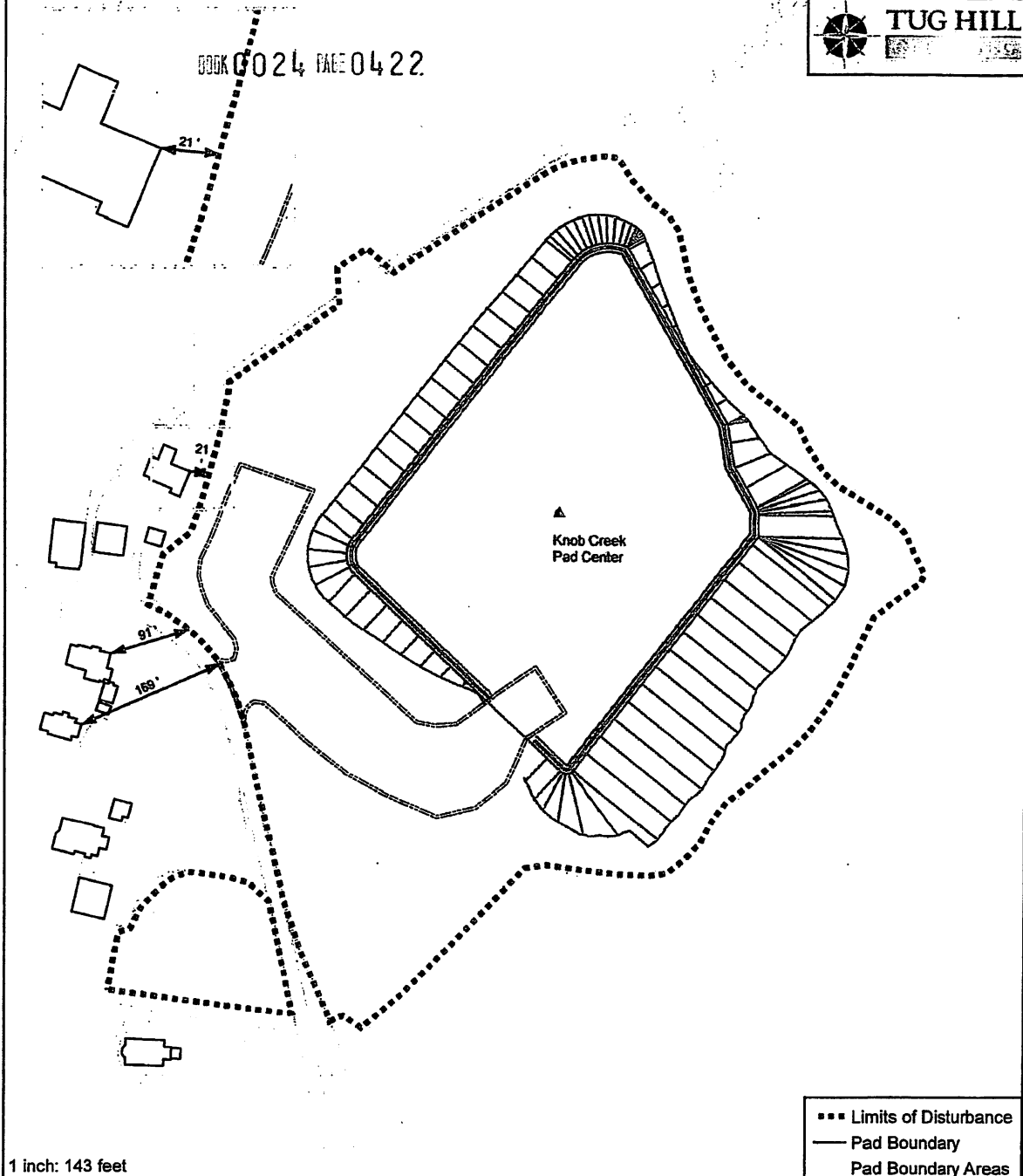
(NOTARY SEAL/STAMP REQUIRED)



Notary Public for the aforesaid County and/or State

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

Marshall County
Jan Pest, Clerk
Instrument 1439958
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 418
Pages Recorded 3
Recording Cost \$ 11.00



- - - Limits of Disturbance
 — Pad Boundary
 — Pad Boundary Areas

1 inch: 143 feet

0 35 70 140
Feet

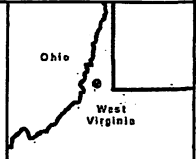
N

NOTE: THE APPROVED SITE LOCATION FOR THE SURFACE SITE ACCESS ROAD SHOWN ON THIS PLAN AND THE LOCATION OF THE PROPERTY ARE SUBJECT TO ALL EXISTING AND FUTURE EASEMENTS AND RIGHTS OF WAY. LOCATIONS SHOWN ON THIS PLAN ARE NOT TO BE CONSIDERED AS GUARANTEED. THE ACTUAL PROPERTY LINE COULD DIFFER FROM THE SHOWN LOCATION. THE COUNTY RECORDS AND THE APPROVED SITE LOCATION FOR THE SURFACE SITE ACCESS ROAD AND RIGHT OF WAY SHALL BE BY REFERENCE AS SHOWN ON THE PLAN.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Plan No: For 3-24-18
 Name: [Signature]
 Name: Mark H. Fox



Date: 3/2/2018
 PCS: NAD 1983 UTM Zone 17N Feet US

Mark H. Fox 3-24-18

May 24 3-30-18
Thomas John Fox 3-31-18

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)

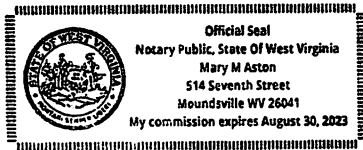
STATE OF West Virginia :
County of Marshall , to-wit:

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)

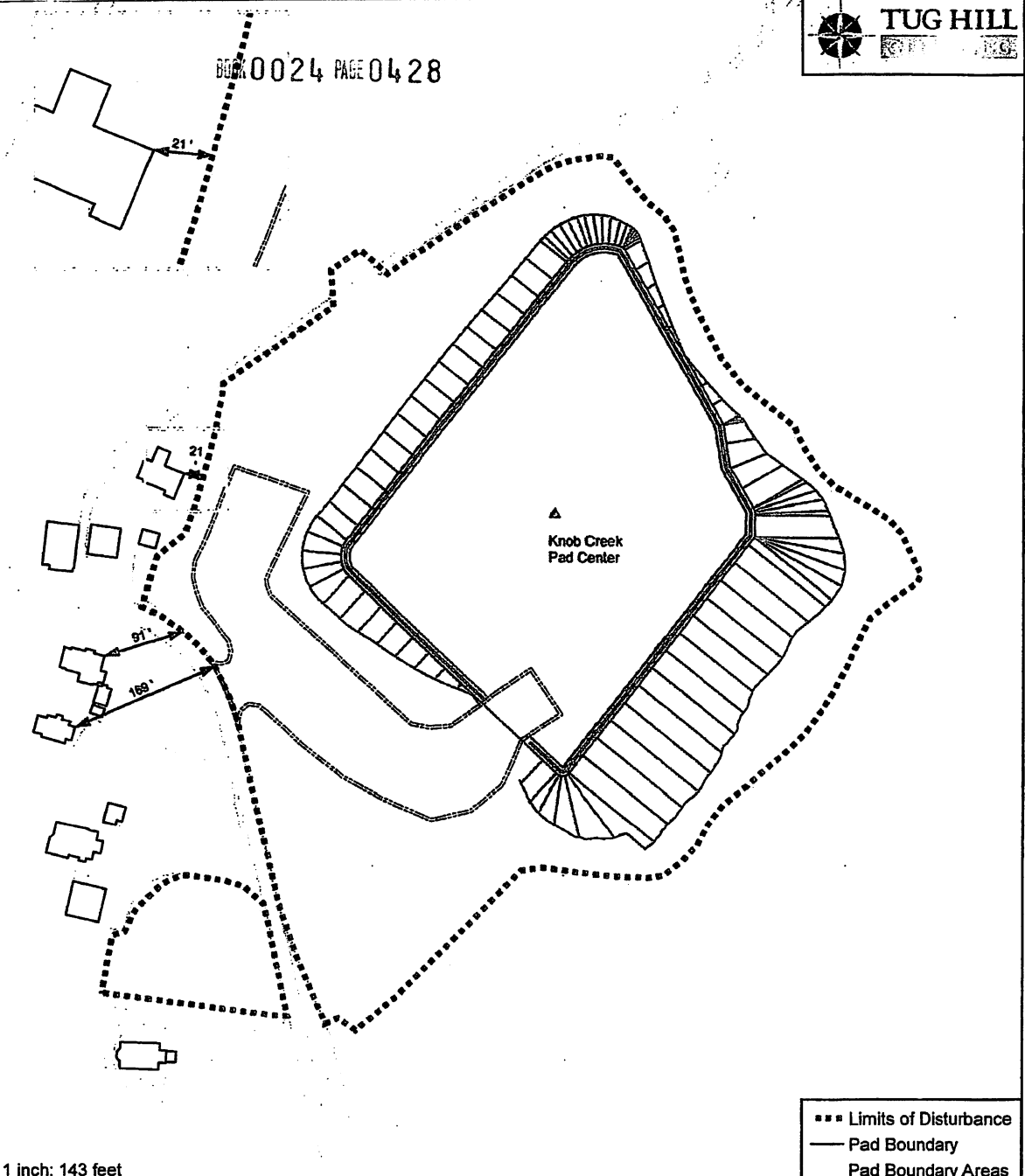


Mary M Aston
Notary Public for the aforesaid
County and/or State

This Instrument Prepared By:

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

Marshall County
Jan Pest, Clerk
Instrument 1439961
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 427
Pages Recorded 3
Recording Cost \$ 11.00



1 inch: 143 feet

0 35 70 140
Feet

N

NOTE: WE APPROVED THE LOCATION FOR THE
 SERVICE SITE, ACCESS ROAD, SIGN OFF-RAMP AND THE
 LOCATION OF THE PROPERTY TO BE ACQUIRED. WEALSO
 LOCATIONS OF PROPERTY LINES. THIS PLAN IS
 LOCATIONS SHOWN AS THIS DOES NOT AN EXACT
 OPERATOR. THE ACTUAL PROPERTY LINES SHOULD BE
 OBTAINED AND COMPARED IN THE FIELD AS PLOTTED
 IN THE COUNTY RECORDS AND THE APPROVED THE
 LOCATION FOR THE SERVICE SITE ACCESS ROAD AND
 SIGN OFF-RAMP AS ITS LOCATION IS NOT FULLY
 DETERMINED.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Paul H. Fox 3-24-18
 Name: [Signature]
 Name: Mark H. Fox



Date: 3/8/2018
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 22, 2018
 Thomas John Fox 3-31-18

TUG HILL OPERATING LLC
SUSANNE DELIERE
380 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG PA 15317

LIMITED POWER OF ATTORNEY

That I, Mary A. 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 Mary A. 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.

Mary A. Fox (SEAL)

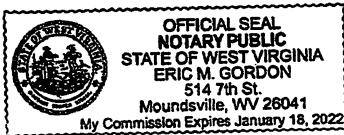
STATE OF West Virginia:
COUNTY OF Marshall, to-wit:

The foregoing instrument was acknowledged before me this 30th day of March, 2018, by Mary A. Fox.

Given under my hand this 30th day of March, 2018.

My commission expires: Jan 18, 2022

(NOTARY SEAL/STAMP REQUIRED)



Notary Public for the aforesaid
County and/or State

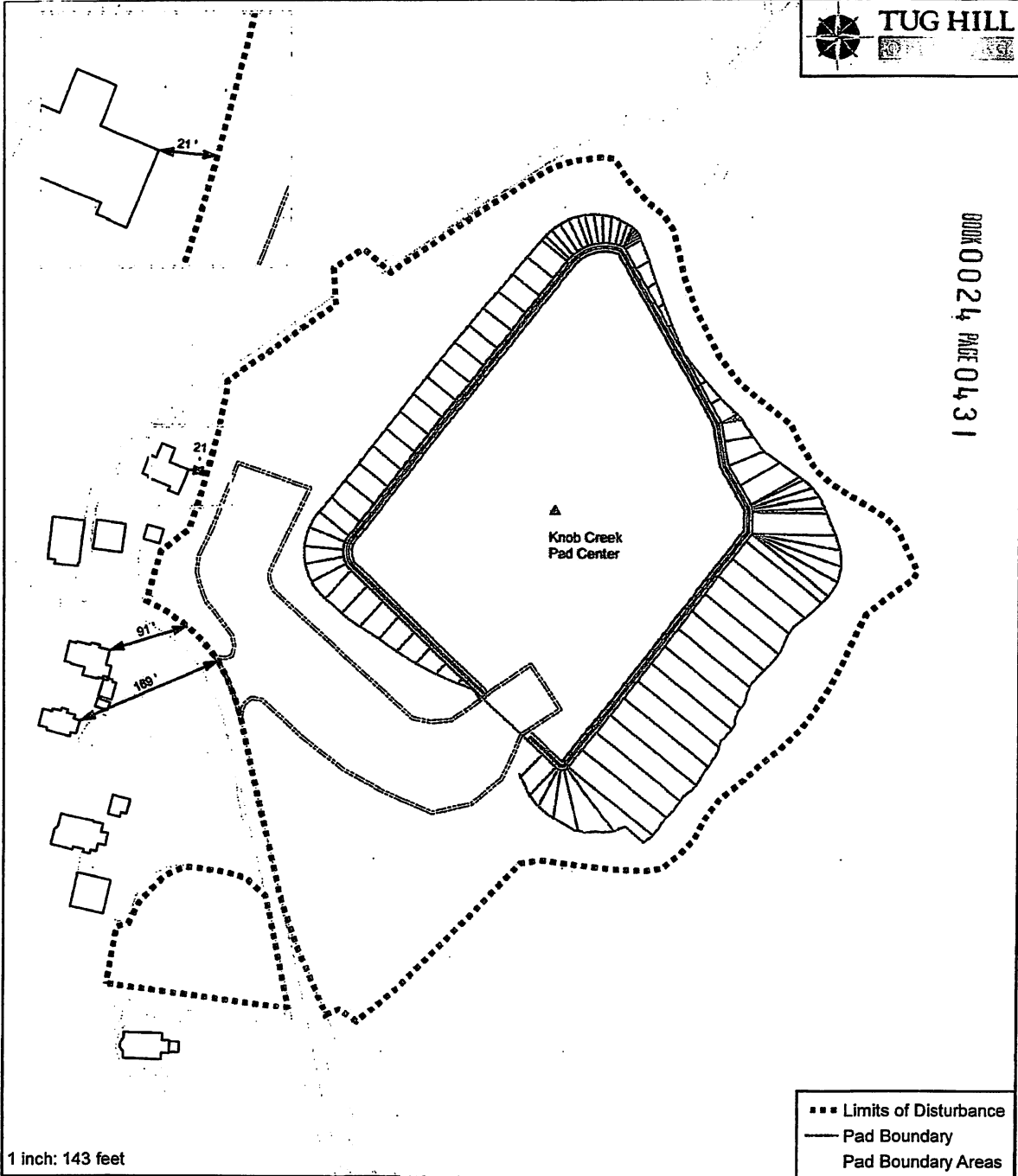
This Instrument Prepared By:

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

Marshall County
Jan Pest, Clerk
Instrument 1439962
05/03/2018 @ 02:36:25 PM
POWER OF ATTORNEY
Book 24 @ Page 430
Pages Recorded 3
Recording Cost \$ 11.00

BOOK 0024 PAGE 0431



--- Limits of Disturbance
 — Pad Boundary
 --- Pad Boundary Areas

1 inch: 143 feet

0 35 70 140
 Feet

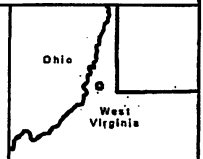
N

NOTE: THE APPROVED SITE LOCATION FOR THE CONDUIT AND SERVICE SHALL BE THAT OF THE LOCATION OF THE PROPERTY AS RECORDED AND AS SHOWN ON THE RECORDS OF THE COUNTY. THE LOCATION SHALL BE THE CENTER OF THE PROPERTY AS SHOWN ON THE RECORDS OF THE COUNTY. THE LOCATION SHALL BE THE CENTER OF THE PROPERTY AS SHOWN ON THE RECORDS OF THE COUNTY. THE LOCATION SHALL BE THE CENTER OF THE PROPERTY AS SHOWN ON THE RECORDS OF THE COUNTY.

Exhibit "A"

Marshall, WV

Date: 3-24-18
 Part of Fox 3-24-18
 Name: [Signature]
 Name: [Signature]



Date: 3/9/2018
 PCS: NAD 1983 UTM Zone 17N Foot US

Mark H. Fox 3-24-18

May 1st 3-30-18
 Thomas John Fox 3-31-18

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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, Louis T. 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: 525,234.06
County: Marshall UTM NAD 83 Northing: 4,402,282.36
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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

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 Louis T. Fox
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: [Signature]
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

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

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

Subscribed and sworn before me this 30 day of SEPTEMBER 2019
Maureen A Stead Notary Public

My Commission Expires 1/28/23

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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, Mary A. 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: 525,234.08
County: Marshall UTM NAD 83 Northing: 4,402,282.36
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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

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 Mary A. Fox
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: _____
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: _____
Telephone: 724-749-6388

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

Subscribed and sworn before me this 30 day of SEPTEMBER 2019
Maureen A Stead Notary Public
My Commission Expires 1/28/23

WW-6RW
(1-12)

API NO. 47- 051 -
OPERATOR WELL NO. Knob Creek S-15HU
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:	<u>West Virginia</u>	UTM NAD 83 Easting:	<u>525,234.08</u>
County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,402,282.36</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - County Route 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>		

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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

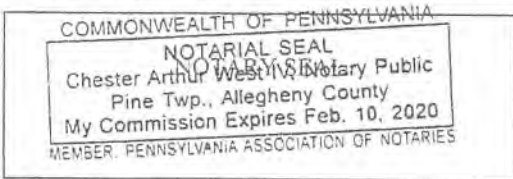
Signature: _____
Print Name: _____
Date: _____

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: [Signature]
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

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



Subscribed and sworn before me this 30th day of September 2019

Notary Public

My Commission Expires 2-10-2020

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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 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:

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County: Marshall UTM NAD 83 Northing: 4,402,282.36
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
 - DEVELOPED SPRINGS
 - DWELLINGS
 - AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

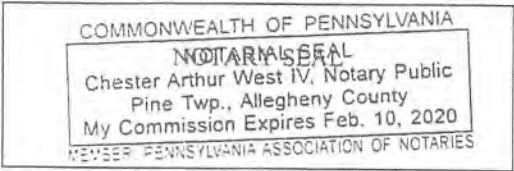
Signature: _____
Print Name: _____
Date: _____

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: [Signature]
Date: 9/30/2009

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: _____
Telephone: 724-749-8888



Subscribed and sworn before me this 30th day of September 2009
[Signature] Notary Public
My Commission Expires 2-10-2020

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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, Linda 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: 525,234.08
County: Marshall UTM NAD 83 Northing: 4,402,282.36
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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

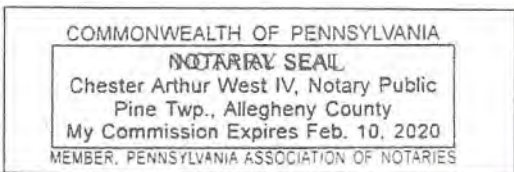
Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC as Attorney-in-Fact for Linda Lee Franklin
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: [Signature]
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: [Signature]
Telephone: 724-749-8368



Subscribed and sworn before me this 30th day of September 2019

Notary Public
My Commission Expires 2-10-2020

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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, 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:

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County: <u>Marshall</u>	UTM NAD 83 Northing: <u>4,402,282.36</u>
District: <u>Meade</u>	Public Road Access: <u>St. Joseph Road - County Route 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>	

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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

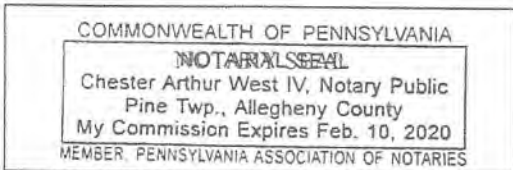
Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC
By: Douglas L. DeMartino, Esq.
Its: Attorney-in-Fact
Signature: [Signature]
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

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



Subscribed and sworn before me this 30th day of September 2019

Notary Public
My Commission Expires 2-10-2020

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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, 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:

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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
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

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 Paul G. Fox
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: _____
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: _____
Telephone: 724-749-8388

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Sean Cotter, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires Oct. 12, 2019

Subscribed and sworn before me this 30 day of September

Notary Public

My Commission Expires 10/12/2019

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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.

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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:

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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

- EXISTING WATER WELLS
- DEVELOPED SPRINGS
- DWELLINGS
- AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

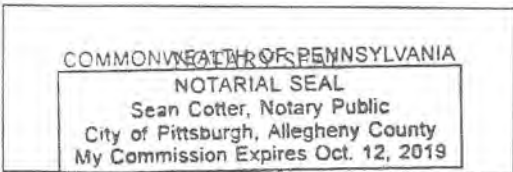
Signature: _____
Print Name: _____
Date: _____

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: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: _____
Telephone: 724-749-8388



Subscribed and sworn before me this 30 day of September

Notary Public

My Commission Expires 10/12/2019

WW-6RW
(1-12)

API NO. 47- _____
OPERATOR WELL NO. Knob Creek S-15HU
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

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WAIVER

I, David E. 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:

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County:	<u>Marshall</u>	UTM NAD 83 Northing:	<u>4,402,282.36</u>
District:	<u>Meade</u>	Public Road Access:	<u>St. Joseph Road - County Route 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>		

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
 - DEVELOPED SPRINGS
 - DWELLINGS
 - AGRICULTURAL BUILDINGS

FOR EXECUTION BY A NATURAL PERSON

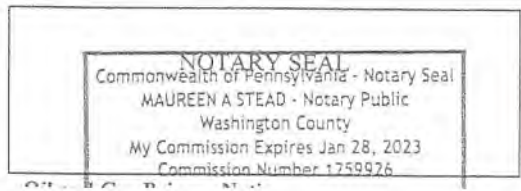
Signature: _____
Print Name: _____
Date: _____

FOR EXECUTION BY A CORPORATION, ETC.

Company: TH Exploration, LLC as Attorney-in-Fact for David E. Fox
By: Douglas L. DeMartino
Its: Attorney-in-Fact
Signature: _____
Date: 9/30/2019

Well Operator: Tug Hill Operating, LLC
By: David G. DeLallo
Its: Land Team Lead

Signature: _____
Telephone: 724-749-8388



Subscribed and sworn before me this 30 day of SEPTEMBER 2019
Maureen A Stead Notary Public
My Commission Expires 1/28/23



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Byrd E. White, III
Secretary of Transportation/
Commissioner of Highways

October 1, 2019

Jimmy Wriston, P. E.
Deputy Secretary/
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 Unit N-1HM	Knob Creek Unit N-2HM	Knob Creek Unit N-3HM
Knob Creek Unit S-6HM	Knob Creek Unit S-7HM	Knob Creek Unit S-8HM
Knob Creek Unit S-9HM	Knob Creek Unit S-10HM	Knob Creek Unit N-11HU
Knob Creek Unit S-14HU	Knob Creek Unit S-15HU	Knob Creek Unit S-16HU

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.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018.

Very Truly Yours,

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

Cc: Amy Miller
Tug Hill Operating, LLC
CH, OM, D-6
File

RECEIVED
Office of Oil and Gas
OCT - 2 2019
WV Department of
Environmental Protection



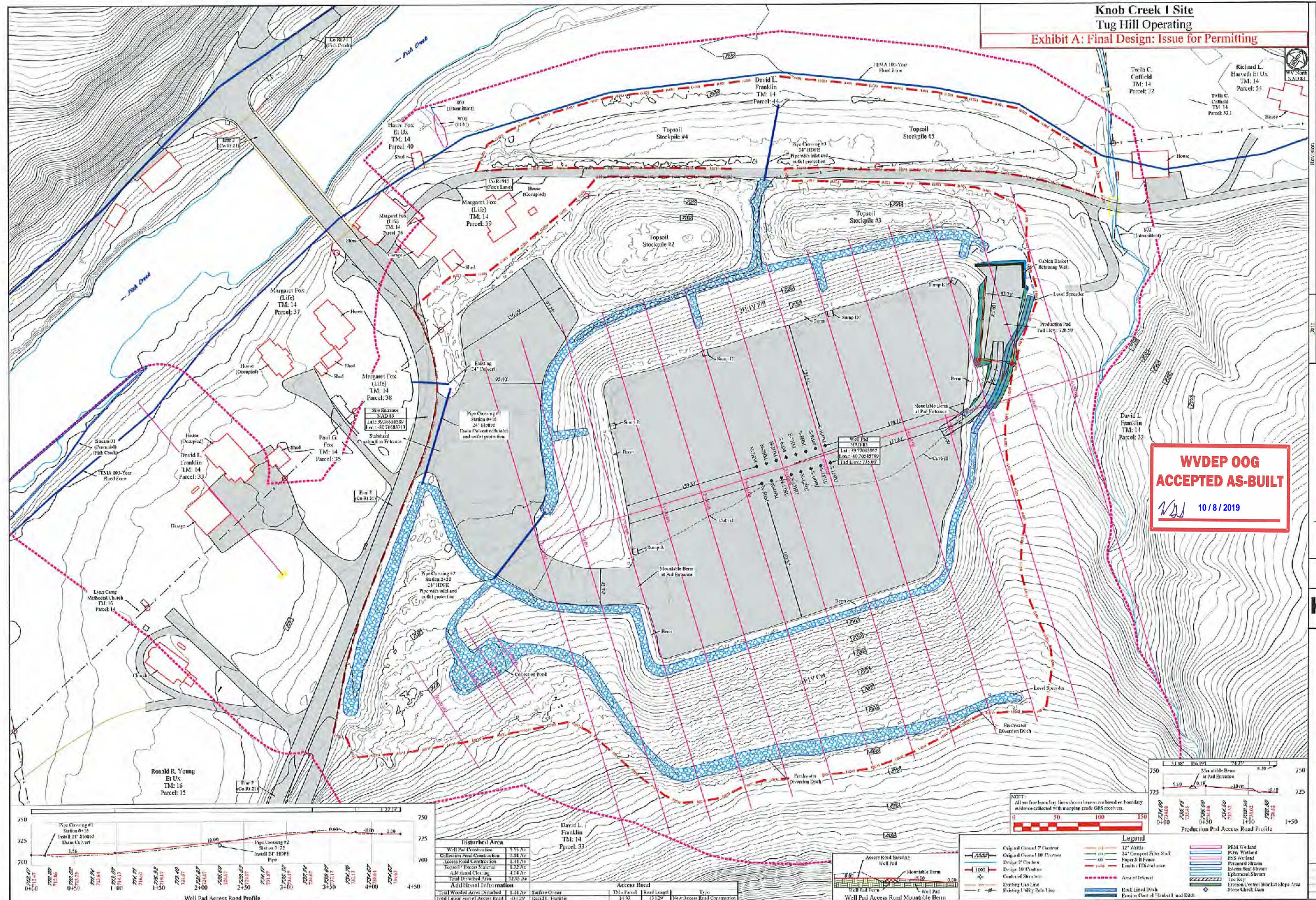
PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Knob Creek S-15HU

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
OCT - 2 2019
WV Department of
Environmental Protection

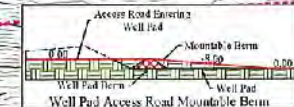
Knob Creek 1 Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting



WVDEP OOG
ACCEPTED AS-BUILT
WJL 10/8/2019



Disturbed Area		Access Road	
Well Pad Construction	0.95 Ac	TM: Parcel	14-33
Collection Road Construction	0.14 Ac	Road Length	0.129
Access Road Construction	1.41 Ac	Type	Non-Access Road Connector
Topsoil Process Material	1.22 Ac		
0.50 Inland Clearing	1.14 Ac		
Total Disturbed Area	12.97 Ac		
Additional Information		Surface Owner	
100% Wooded Area Disturbed	1.44 Ac	TM: Parcel	14-33
100% Linear Feet of Access Road	48.29	David L. Franklin	



Legend

Original Contour	12' Wells	PEM Wetland
Original Contour 100' Contour	24' Composite Filled S&K	POW Wetland
Design 2' Contour	60' Paper 3-ft Fence	Perennial Stream
Design 10' Contour	Line 1 - FT/Stone Line	Intermittent Stream
Center of Site Line	Area of Impact	Ephermal Stream
Existing Gas Line	Rock Lined Ditch	Use Key
Existing Utility Pole Line	Erion Control Bucket Slope Area	Stone Check Dam

Richard L. Howells Et Ux TM: 14 Parcel: 54
 Twila C. Coffield TM: 14 Parcel: 32
 Twila C. Coffield TM: 14 Parcel: 32.1
 Twila C. Coffield TM: 14 Parcel: 32.1

David L. Franklin TM: 14 Parcel: 33
 Margaret Fox (Life) TM: 14 Parcel: 37
 Margaret Fox (Life) TM: 14 Parcel: 38
 Margaret Fox (Life) TM: 14 Parcel: 39
 Margaret Fox (Life) TM: 14 Parcel: 40
 David L. Franklin TM: 14 Parcel: 33
 Ronald R. Young Et Ux TM: 16 Parcel: 15
 Lynn Camp Methodist Church TM: 16 Parcel: 14

WV Dept. of Natural Resources
 Design: LEO Expansion
 Design: Revised Well Layout
 Design: Production Pad

2018
 03-26-2018
 04-16-2018
 08-13-2019
 09-26-2019

TUG HILL OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

Kelly S. Surveying
 P.O. Box 2014
 Fairmont, WV 26030
 Group 360000

Knob Creek 1 Site
 Meads District
 Marshall County, WV

Date: 05/20/2018
 Scale: As Shown
 Designed By: ZS
 File No.
 Sheet R of 11