



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

Friday, September 13, 2019
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
CANONSBURG, PA 15317

Re: Permit approval for OLD CROW N-19HU
47-051-02270-00-00

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: OLD CROW N-19HU
Farm Name: DONNA VIVIAN YOHO (TOP)
U.S. WELL NUMBER: 47-051-02270-00-00
Horizontal 6A New Drill
Date Issued: 9/13/2019

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.

API Number: _____

PERMIT CONDITIONS

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



west virginia department of environmental protection

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

Barry K. Lay, Chairman
dep.wv.gov

September 12, 2019

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

RE: Application for Deep Well Permit – API #47-051-02270

COMPANY: Tug Hill Operating, LLC

FARM: Donna Vivian Yoho (TOD) Gary Lance Yoho Old Crow N-19HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

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

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

1. Comments to Notice of Deviation filed? No
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? Yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: **yes; Docket 282-258 Exception Location Hearing
4. Provided a plat showing that the proposed location is a distance of 205 feet from the heel to the nearest lease line or unit boundary and 10 feet from the toe to 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.

** Old Crow N-18HU 47-051-02123; Old Crow N-17HU 47-051-02122; Old Crow N-20HU 47-051-02191; Bryan N-14HU 47-051-02031; Bryan N-13HU 47-051-02030; Bryan N-12HU 47-051-02029; Woodford-10HU 47-051-02152; Michter N-6IU 47-051-02206; Michter N-7HU 47-051-02207; MND 6 HHS 47-051-01732; MND20AU 47-051-02011; MND20BU 47-051-02012; MND20CU 47-051-02013; MND20DU 47-051-02014; Corley N-9IU 47-051-01983; Corley N-10HU 47-051-01998

Sincerely,

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

Susan Rose
Administrator

4705102270



February 22, 2019

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

RE: Old Crow N-19HU

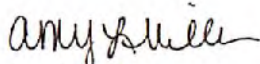
Subject: Proposed Voluntary Pooling and Unitization

Dear Susan:

Tug Hill Operating, LLC is authorized through, either lease or other agreement, to unitize and pool all lands falling within the boundaries of the proposed voluntary unit included with this submission.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 724-749-8388, or by email at amiller@tug-hillop.com.

Sincerely,


Amy L. Miller
Permitting Specialist
Tug Hill Operating

380 SOUTHPOINTE BLVD • SUITE 200 • CANONSBURG, PA 15317 • T 724.485-2000 • F 724.338.2030

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WW-6B
(04/15)

API NO. 47-051
OPERATOR WELL NO. Old Crow N-19HU
Well Pad Name: Old Crow

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

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

2) Operator's Well Number: Old Crow N-19HU Well Pad Name: Old Crow

3) Farm Name/Surface Owner: Donna Vivian Yoho (TOD) Gary Lance Yoho Public Road Access: Rines Ridge Road (County Route 76)

4) Elevation, current ground: 1265' Elevation, proposed post-construction: 1265'

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

(b) If Gas Shallow Deep
Horizontal **x Revised Borehole**

6) Existing Pad: Yes or No Yes *JM* 9/12/2019

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Poin. Pleasant is the target formation at a depth of 11,464' - 11,343' - thickness of 121' and anticipated pressure of approx. 9500 psi.

8) Proposed Total Vertical Depth: 11,614' ✓

9) Formation at Total Vertical Depth: Trenton ✓

10) Proposed Total Measured Depth: 26,626' ✓

11) Proposed Horizontal Leg Length: 13,932.77' ✓

12) Approximate Fresh Water Strata Depths: 70' ; 912' ✓

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

14) Approximate Saltwater Depths: 2,167' ✓

15) Approximate Coal Seam Depths: Sewickley Coal - 814' ; Pittsburgh Coal - 906' ✓

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

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

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

18) CASING AND TUBING PROGRAM

TYPE	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#	1020'	1020' ✓	1,644FT^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2840'	2840' ✓	2,002FT^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,870'	10,870'	3,545FT^3(CTS)
Production	5 1/2"	NEW	P110	23#	26,626'	26,626' ✓	6,284FT^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,766'	
Liners							

JUN 9/4/19

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"			11,385	11,624		
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. Old Crow N-19HU

Well Pad Name: Old Crow

John
9/14/19

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

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

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

Well to be completed with approximately 34,825,000 lb proppant and 538,420 bbl of water. Max rate = 80 bpm; max psi = 12,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 19.18 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.64 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.



Tug Hill Operating, LLC Casing and Cement Program

Old Crow N-19HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	35"	120'	CTS
Surface	20"	J55	28"	1,020'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,840'	CTS
Intermediate 2	9 5/8"	HPP110	12 1/4"	10,870'	CTS
Production	5 1/2"	HCP110	8 1/2"	26,626'	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

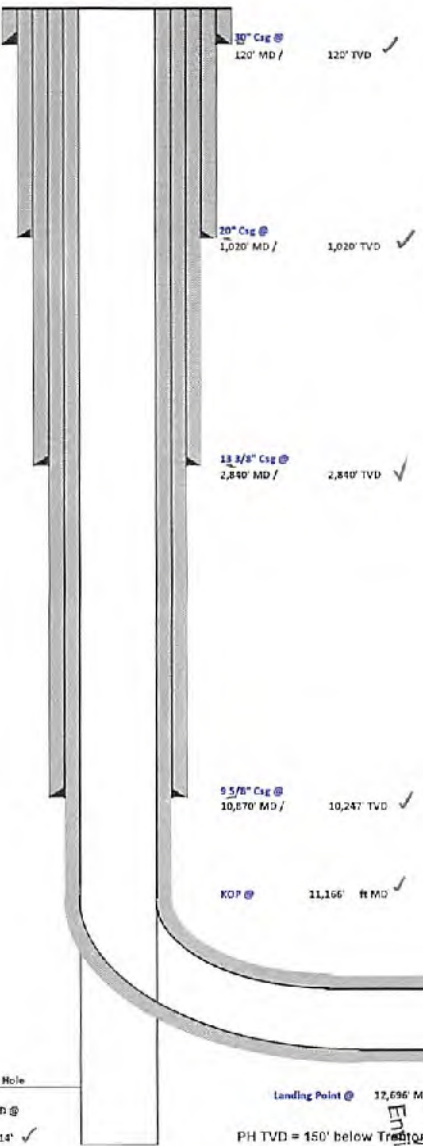
Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

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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WELL NAME: Old Crow N-19HU
 STATE: WV COUNTY: Marshall
 DISTRICT: Franklin
 DT Elev: 1,291' GL Elev: 1,265'
 TD: 26,626'
 TN Latitude: 39.77545193
 TN Longitude: -80.76298617
 BH Latitude: 39.815942
 BH Longitude: -80.779251



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	932'
Sewickley Coal	814'
Pittsburgh Coal	906'
Big Lime	2,142'
Berea	2,690'
Tully	6,531'
Marcellus	6,615'
Onondaga	6,568'
Salina	7,365'
Lockport	8,400'
Utica	11,087'
Point Pleasant	11,343'
Landing Depth	11,393'
Trenton	11,464'
Pilot Hole TD	11,614'

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	1,020'	1,020'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,840'	2,840'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,870'	10,247'	47	HPP110	Surface
Production	8 1/2	5 1/2	26,626'	11,150'	23	HCP110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Field Type	Centralizer Notes
Conductor	358	A	15.6	Air	None
Surface	1,772	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,170	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,950	A	14.5	Air	1 Centralizer every other jt
Production	5,588	A	15	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to stc

Handwritten signature and date: 9/14/19

Landing Point @ 12,696' MD / 11,593' TVD
 PH TD @ 11,614' ✓
 PH TVD = 150' below Trenton Top

Lateral TD @ 26,626' H MD
 11,150' H TVD

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Offset Operators within 1500'				
Old Crow N - 19HU				
COUNTY	DISTRICT	PARCEL	OWNER	ADDRESS
MARSHALL	FRANKLIN	5-10-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-1	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-10-1	AMERICAN PETROLEUM PARTNERS, LLC	4600 J. Barry Ct., #310 Canonsburg, PA 15317
MARSHALL	FRANKLIN	5-10-10	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-12.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-14	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-15	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-17	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-19	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-20	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-21	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-22	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.10	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.11	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107

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MARSHALL	FRANKLIN	5-10-4.8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-4.9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-10-9	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-15-8	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-1	TRUSTEES OF THE FREDONIA CHRISTIAN CHURCH AND CEMETERY	2058 Irish Ridge Road Cameron, WV 26033
MARSHALL	FRANKLIN	5-16-19	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-2	TRUSTEES OF THE FREDONIA CHRISTIAN CHURCH AND CEMETERY	2058 Irish Ridge Road Cameron, WV 26033
MARSHALL	FRANKLIN	5-16-23	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-23.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-25	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-3	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-3.1	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-3.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-4	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-5	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-6	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-16-7	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-13	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-13.2	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107

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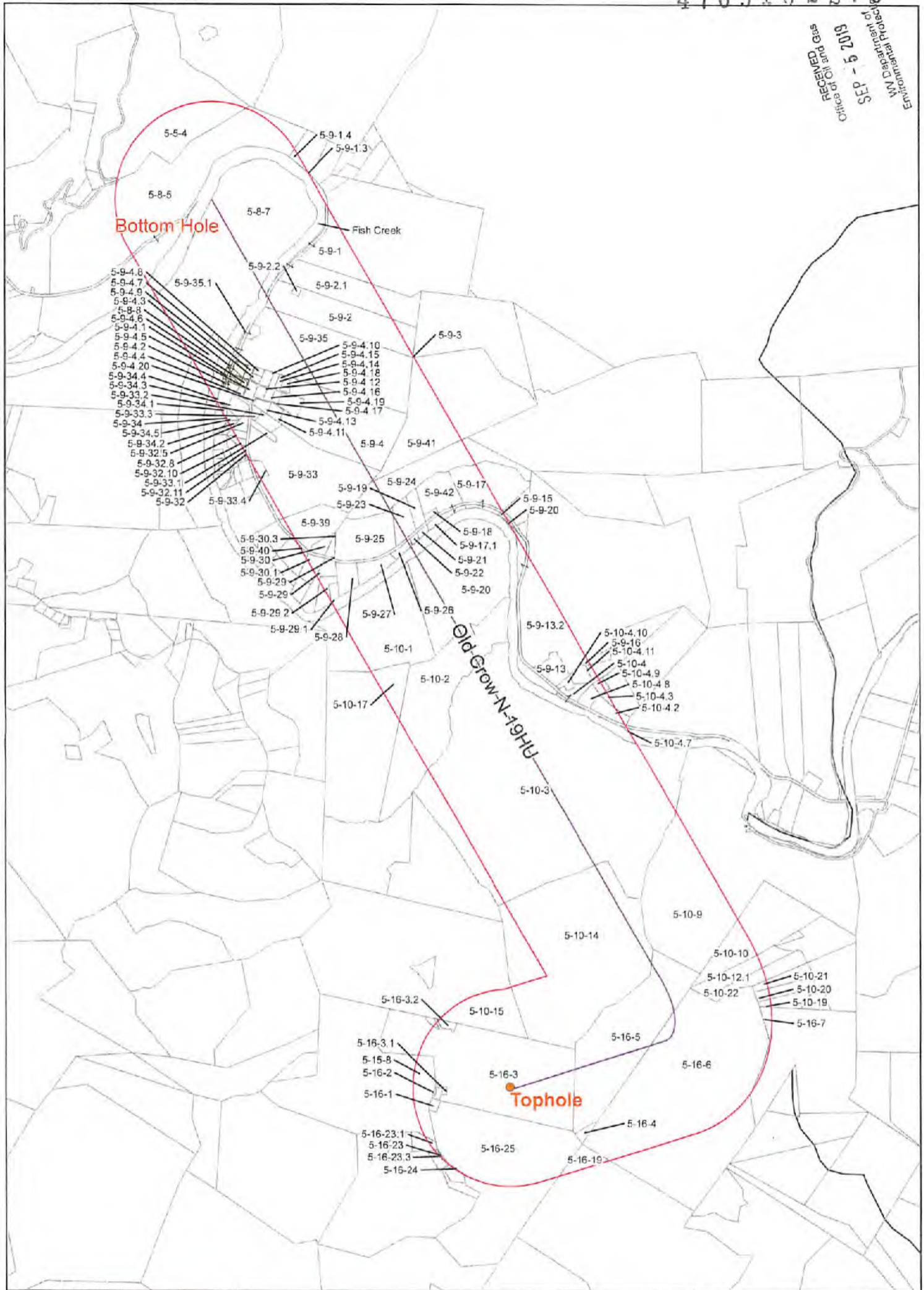
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MARSHALL	FRANKLIN	5-9-16	CHEVRON USA INC	700 Cherrington Pkwy. Coraopolis, PA 15108
MARSHALL	FRANKLIN	5-9-20	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-21	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-22	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-22	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-26	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107
MARSHALL	FRANKLIN	5-9-26	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-27	HG ENERGY II APPALACHIA LLC	5260 Dupont Road Parkersburg, WV 26101
MARSHALL	FRANKLIN	5-9-27	TH EXPLORATION LLC	1320 S. University Dr. Suite 500 FT Worth, TX 76107

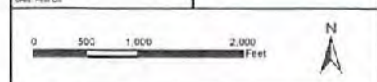
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Section



Coordinate System: NAD 83 UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983
False Easting: 500000.0000
False Northing: 0.0000
Scale Factor: 0.9996
False Origin: 500000.0000
Units: Feet US

CONFIDENTIAL



1500 Foot Buffer
Utica Well
 Old Crow N-19HU
 Operators within 1500 Feet of Well Borehole



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 (4/15/2019) 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

Permit well - Old Crow N-19HU

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705102040	Tug Hill Operating	5589' TVD	None	None	No, existing Marcellus permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705102023	Tug Hill Operating	5581' TVD	None	None	No, existing Marcellus permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705102042	Tug Hill Operating	5693' TVD	None	None	No, existing Marcellus permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705102043	Tug Hill Operating	6699' TVD	None	None	No, existing Marcellus permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705102122	Tug Hill Operating	11520' TVD	None	None	No, existing Point Pleasant permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705102123	Tug Hill Operating		None	None	No, existing Point Pleasant permit. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	Currently a permit.
4705170813	Unknown	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete
4705102227, 4705102226, 4705102192, 4705102189, 4705102208, 4705102181, 4705102168, 4705102185, 4705102186, 4705102187	Tug Hill Operating				Point Pleasant and Marcellus permits. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore	

WV Geologic & Economic Survey Well: County = 51 Permit = 02040

Location Information View Map

API COUNTY PERMIT WELL SURVEY DATE QUOTE LAT LONG STATE COUNTY

4705102227 51 02040 02040 02040 39.125 -80.125 WV Boone

System Hole Location Information

API WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02040 02040 WV Boone 02040 39.125 -80.125

Owner Information

API DATE SURFACE SURFACE WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02040 02040 WV Boone 02040 39.125 -80.125

Completion Information

API DATE WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02040 02040 WV Boone 02040 39.125 -80.125

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 (Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

WV Geologic & Economic Survey Well: County = 51 Permit = 02023

Location Information View Map

API COUNTY PERMIT WELL SURVEY DATE QUOTE LAT LONG STATE COUNTY

4705102227 51 02023 02023 02023 39.125 -80.125 WV Boone

System Hole Location Information

API WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02023 02023 WV Boone 02023 39.125 -80.125

Owner Information

API DATE SURFACE SURFACE WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02023 02023 WV Boone 02023 39.125 -80.125

Completion Information

API DATE WELL DATE STATE COUNTY QUOTE LAT LONG

4705102227 02023 02023 WV Boone 02023 39.125 -80.125

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

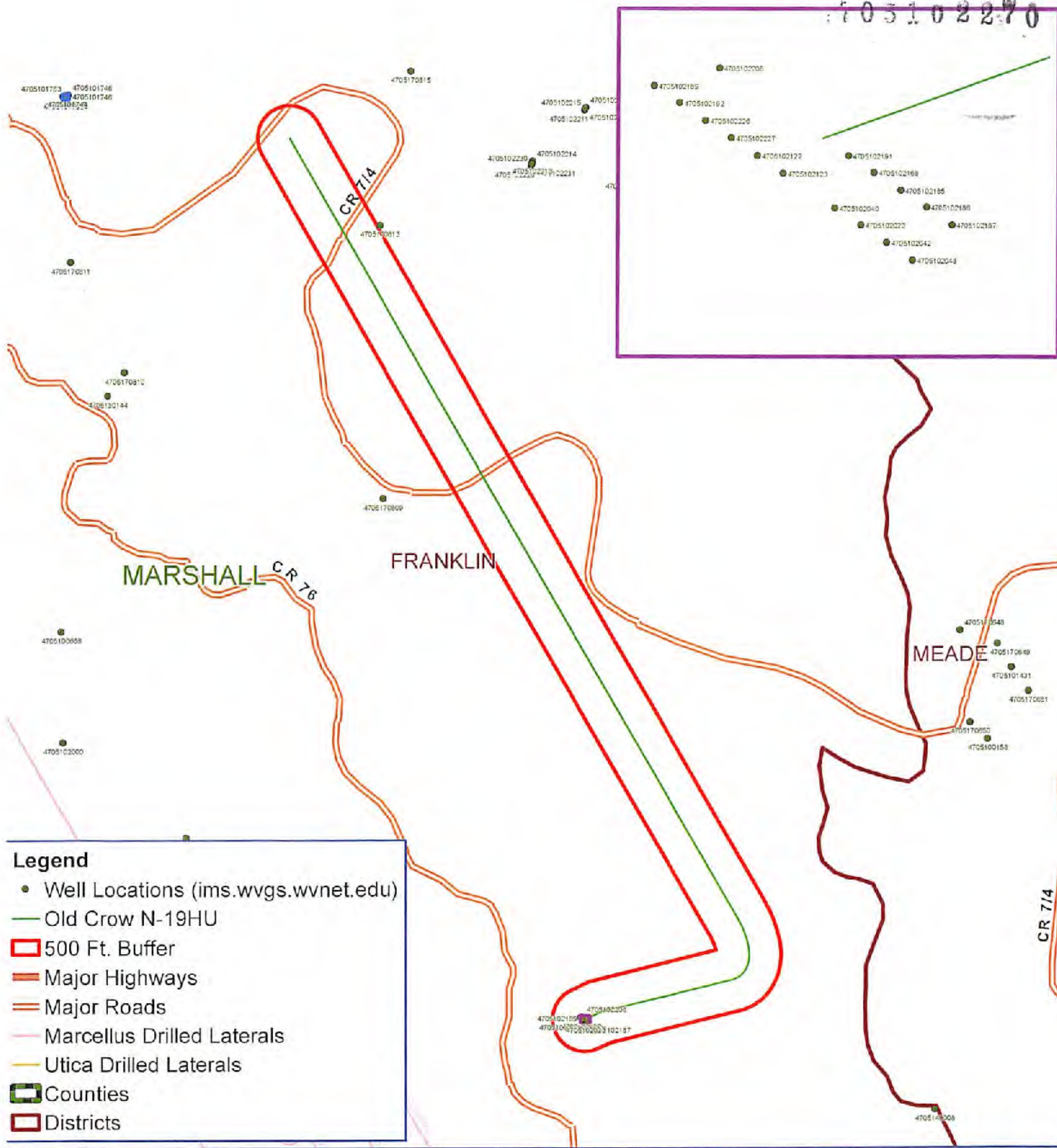
There is no Wireline (Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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703102270



Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Old Crow N-19HU
- ▭ 500 Ft. Buffer
- Major Highways
- Major Roads
- Marcellus Drilled Laterals
- Utica Drilled Laterals
- ▭ Counties
- ▭ Districts



Old Crow N - 19HU
 Franklin District
 Marshall County, WV



Notes

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Well: Old Crow N-19 HU RD (slot E)
 Site: Old Crow Pad
 Project: Marshall County, West Virginia.
 Design: rev0
 Rig: Nabors B 28

SECTION DETAILS

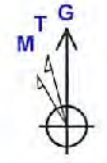
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
2	3100.00	0.00	0.00	3109.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2 1/100' build
3	3350.00	5.00	65.00	3349.68	4.61	9.88	2.00	65.000	1.21	Begin 5.00' tangent
4	6211.20	5.00	65.00	6209.00	110.00	235.89	0.00	0.000	28.79	Begin 2 1/100' drop
5	6461.20	0.00	65.00	6449.68	114.60	245.77	2.00	180.000	29.99	Begin vertical hold
6	7011.52	0.00	65.00	7000.00	114.60	245.77	0.00	65.000	29.99	Begin 2 1/100' build
7	9055.62	40.88	76.27	8875.01	280.47	924.64	2.00	76.270	-29.94	Begin 40.88' tangent
8	11165.56	40.88	76.27	10470.25	503.23	2265.13	0.00	0.000	-148.37	Begin 6 1/100' build/turn
9	12125.41	50.00	351.99	11204.48	1087.93	2543.93	6.00	-115.464	217.34	Begin 8 1/100' build/turn
10	12696.09	91.00	330.00	11393.00	1577.64	2360.93	8.00	-31.571	739.82	Begin 91.00' lateral
11	26626.23	91.00	330.00	11150.00	13639.51	-1603.34	0.00	0.000	14395.38	PBHL/TD 26626.23 MD/11150.00 TVD

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: RKB=1265+26 @ 1291.00ust (Nabors B 28)

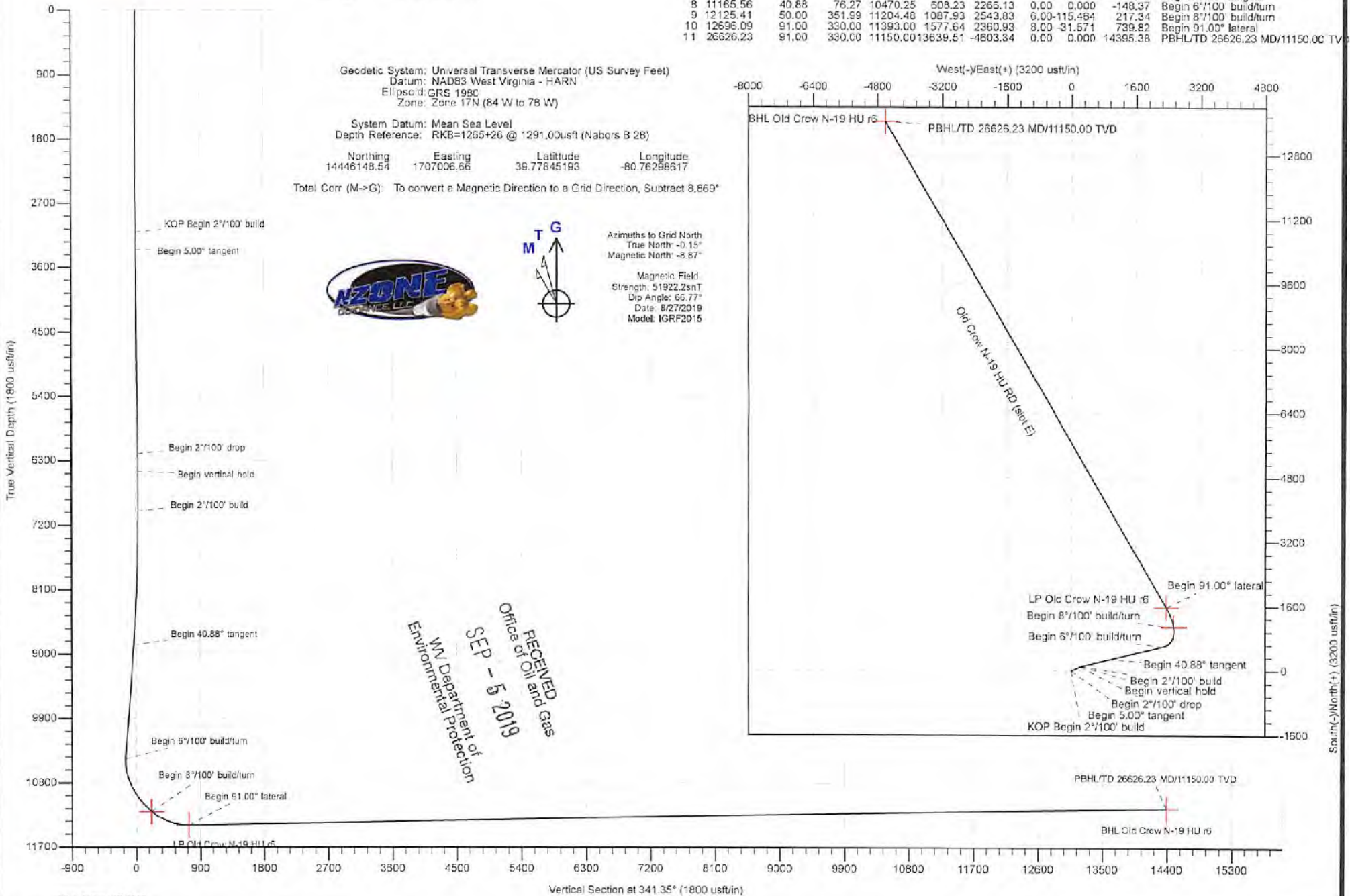
Northing: 14446148.54 Easting: 1707006.66 Latitude: 39.77845193 Longitude: -80.76298617

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.863°



Azimuths to Grid North
 True North: -0.15°
 Magnetic North: -8.87°
 Magnetic Field
 Strength: 51922.2snT
 Dip Angle: 66.77°
 Date: 8/27/2019
 Model: IGRF2015

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Planning Report - Geographic

4705102270

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-19 HU RD (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	Old Crow Pad				
Site Position:		Northing:	14,446,179.89 usft	Latitude:	39.77853828
From:	Lat/Long	Easting:	1,706,970.33 usft	Longitude:	-80.76311519
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.152 °

Well	Old Crow N-19 HU RD (slot E)					
Well Position	+N/-S	0.00 usft	Northing:	14,446,148.54 usft	Latitude:	39.77845193
	+E/-W	0.00 usft	Easting:	1,707,006.66 usft	Longitude:	-80.76298617
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level:	1,265.00 usft	

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/27/2019	-8.717	66.774	51,922.23783658

Design	rev0				
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	341.35	

Plan Survey Tool Program	Date	8/27/2019			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	26,826.23 rev0 (Original Hole)	MWD MWD - Standard		

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Planning Report - Geographic

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Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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	
3,350.00	5.00	65.00	3,349.68	4.61	9.88	2.00	2.00	0.00	65.000	
6,211.21	5.00	65.00	6,200.00	110.00	235.89	0.00	0.00	0.00	0.000	
6,461.21	0.00	65.00	6,449.68	114.60	245.77	2.00	-2.00	0.00	180.000	
7,011.52	0.00	65.00	7,000.00	114.60	245.77	0.00	0.00	0.00	65.000	
9,055.62	40.88	76.27	8,875.01	280.47	924.64	2.00	2.00	0.55	76.270	
11,165.56	40.88	76.27	10,470.25	608.23	2,266.13	0.00	0.00	0.00	0.000	
12,125.41	50.00	351.99	11,204.48	1,087.93	2,543.83	6.00	0.85	-8.78	-115.464	Old Crow N-19 HU int
12,696.09	91.00	330.00	11,393.00	1,577.64	2,360.93	8.00	7.18	-3.85	-31.571	
26,626.23	91.00	330.00	11,150.00	13,639.51	-4,603.34	0.00	0.00	0.00	0.000	BHL Old Crow N-19 H

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Planning Report - Geographic

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Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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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	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
100.00	0.00	0.00	100.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
200.00	0.00	0.00	200.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
300.00	0.00	0.00	300.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
400.00	0.00	0.00	400.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
500.00	0.00	0.00	500.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
600.00	0.00	0.00	600.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
700.00	0.00	0.00	700.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
800.00	0.00	0.00	800.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
900.00	0.00	0.00	900.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,600.00	0.00	0.00	1,600.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,700.00	0.00	0.00	1,700.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,800.00	0.00	0.00	1,800.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
1,900.00	0.00	0.00	1,900.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,000.00	0.00	0.00	2,000.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,100.00	0.00	0.00	2,100.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,200.00	0.00	0.00	2,200.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,300.00	0.00	0.00	2,300.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,400.00	0.00	0.00	2,400.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,500.00	0.00	0.00	2,500.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,600.00	0.00	0.00	2,600.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,700.00	0.00	0.00	2,700.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,800.00	0.00	0.00	2,800.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
2,900.00	0.00	0.00	2,900.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
3,000.00	0.00	0.00	3,000.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
3,100.00	0.00	0.00	3,100.00	0.00	0.00	14,446,148.54	1,707,006.66	39.77845193	-80.76298617
KOP Begin 2°/100' build									
3,200.00	2.00	65.00	3,199.98	0.74	1.58	14,446,149.28	1,707,008.24	39.77845395	-80.76298053
3,300.00	4.00	65.00	3,299.84	2.95	6.32	14,446,151.49	1,707,012.99	39.77845999	-80.76296363
3,350.00	5.00	65.00	3,349.68	4.61	9.88	14,446,153.15	1,707,016.54	39.77846451	-80.76295096
Begin 5.00° tangent									
3,400.00	5.00	65.00	3,399.49	6.45	13.83	14,446,154.99	1,707,020.49	39.77846954	-80.76293689
3,500.00	5.00	65.00	3,499.11	10.13	21.73	14,446,158.67	1,707,028.39	39.77847960	-80.76290874
3,600.00	5.00	65.00	3,598.73	13.82	29.63	14,446,162.36	1,707,036.29	39.77848966	-80.76288059
3,700.00	5.00	65.00	3,698.35	17.50	37.53	14,446,166.04	1,707,044.19	39.77849972	-80.76285244
3,800.00	5.00	65.00	3,797.97	21.18	45.43	14,446,169.72	1,707,052.09	39.77850977	-80.76282429
3,900.00	5.00	65.00	3,897.59	24.87	53.32	14,446,173.41	1,707,059.99	39.77851983	-80.76279614
4,000.00	5.00	65.00	3,997.21	28.55	61.22	14,446,177.09	1,707,067.89	39.77852989	-80.76276799
4,100.00	5.00	65.00	4,096.83	32.23	69.12	14,446,180.77	1,707,075.78	39.77853995	-80.76273984
4,200.00	5.00	65.00	4,196.45	35.92	77.02	14,446,184.46	1,707,083.68	39.77855001	-80.76271169
4,300.00	5.00	65.00	4,296.07	39.60	84.92	14,446,188.14	1,707,091.58	39.77856006	-80.76268354
4,400.00	5.00	65.00	4,395.69	43.28	92.82	14,446,191.82	1,707,099.48	39.77857012	-80.76265539
4,500.00	5.00	65.00	4,495.31	46.97	100.72	14,446,195.51	1,707,107.38	39.77858018	-80.76262724
4,600.00	5.00	65.00	4,594.93	50.65	108.62	14,446,199.19	1,707,115.28	39.77859024	-80.76259909
4,700.00	5.00	65.00	4,694.55	54.33	116.52	14,446,202.87	1,707,123.18	39.77860030	-80.76257094
4,800.00	5.00	65.00	4,794.17	58.02	124.42	14,448,206.56	1,707,131.08	39.77861035	-80.76254279
4,900.00	5.00	65.00	4,893.78	61.70	132.31	14,446,210.24	1,707,138.98	39.77862041	-80.76251465
5,000.00	5.00	65.00	4,993.40	65.38	140.21	14,446,213.92	1,707,146.88	39.77863047	-80.76248650



Planning Report - Geographic

4105102270

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-19 HU RD (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1285+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1285+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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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
5,100.00	5.00	65.00	5,093.02	69.07	148.11	14,446,217.61	1,707,154.77	39.77864053	-80.76245835
5,200.00	5.00	65.00	5,192.64	72.75	158.01	14,446,221.29	1,707,162.67	39.77865059	-80.76243020
5,300.00	5.00	65.00	5,292.26	76.43	163.91	14,446,224.97	1,707,170.57	39.77866064	-80.76240205
5,400.00	5.00	65.00	5,391.88	80.12	171.81	14,446,228.66	1,707,178.47	39.77867070	-80.76237390
5,500.00	5.00	65.00	5,491.50	83.80	179.71	14,446,232.34	1,707,186.37	39.77868076	-80.76234575
5,600.00	5.00	65.00	5,591.12	87.48	187.61	14,446,236.02	1,707,194.27	39.77869082	-80.76231760
5,700.00	5.00	65.00	5,690.74	91.17	195.51	14,446,239.71	1,707,202.17	39.77870088	-80.76228945
5,800.00	5.00	65.00	5,790.36	94.85	203.41	14,446,243.39	1,707,210.07	39.77871093	-80.76226130
5,900.00	5.00	65.00	5,889.98	98.53	211.30	14,446,247.07	1,707,217.97	39.77872099	-80.76223315
6,000.00	5.00	65.00	5,989.60	102.22	219.20	14,446,250.76	1,707,225.87	39.77873105	-80.76220500
6,100.00	5.00	65.00	6,089.22	105.90	227.10	14,446,254.44	1,707,233.76	39.77874111	-80.76217685
6,200.00	5.00	65.00	6,188.84	109.58	235.00	14,446,258.12	1,707,241.66	39.77875117	-80.76214870
6,211.21	5.00	65.00	6,200.00	110.00	235.89	14,446,258.54	1,707,242.55	39.77875229	-80.76214555
Begin 2°/100' drop									
6,300.00	3.22	65.00	6,288.56	112.69	241.66	14,446,261.23	1,707,248.32	39.77875964	-80.76212498
6,400.00	1.22	65.00	6,388.48	114.33	245.17	14,446,262.87	1,707,251.84	39.77876412	-80.76211245
6,461.21	0.00	65.00	6,449.68	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
Begin vertical hold									
6,500.00	0.00	0.00	6,488.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
6,600.00	0.00	65.00	6,588.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
6,700.00	0.00	0.00	6,688.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
6,800.00	0.00	0.00	6,788.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
6,900.00	0.00	65.00	6,888.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
7,000.00	0.00	0.00	6,988.48	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
7,011.52	0.00	0.00	7,000.00	114.60	245.77	14,446,263.14	1,707,252.43	39.77876487	-80.76211034
Begin 2°/100' build									
7,100.00	1.77	76.27	7,088.46	114.93	247.09	14,446,263.47	1,707,253.76	39.77876575	-80.76210561
7,200.00	3.77	76.27	7,188.34	116.07	251.79	14,446,264.62	1,707,258.45	39.77876887	-80.76208889
7,300.00	5.77	76.27	7,287.99	118.05	259.86	14,446,266.59	1,707,266.53	39.77877423	-80.76206013
7,400.00	7.77	76.27	7,387.29	120.84	271.31	14,446,269.39	1,707,277.98	39.77878183	-80.76201935
7,500.00	9.77	76.27	7,486.11	124.46	286.12	14,446,273.01	1,707,292.79	39.77879166	-80.76196660
7,600.00	11.77	76.27	7,584.35	128.90	304.27	14,446,277.44	1,707,310.94	39.77880370	-80.76190195
7,700.00	13.77	76.27	7,681.87	134.14	325.75	14,446,282.69	1,707,332.41	39.77881795	-80.76182548
7,800.00	15.77	76.27	7,778.56	140.19	350.51	14,446,288.74	1,707,357.17	39.77883439	-80.76173729
7,900.00	17.77	76.27	7,874.30	147.04	378.54	14,446,295.58	1,707,385.20	39.77885299	-80.76163747
8,000.00	19.77	76.27	7,968.98	154.68	409.79	14,446,303.22	1,707,416.45	39.77887373	-80.76152615
8,100.00	21.77	76.27	8,062.48	163.09	444.24	14,446,311.64	1,707,450.90	39.77889559	-80.76140347
8,200.00	23.77	76.27	8,154.68	172.28	481.83	14,446,320.82	1,707,488.49	39.77892154	-80.76126957
8,300.00	25.77	76.27	8,245.47	182.22	522.53	14,446,330.77	1,707,529.19	39.77894855	-80.76112462
8,400.00	27.77	76.27	8,334.75	192.91	566.28	14,446,341.45	1,707,572.94	39.77897759	-80.76096879
8,500.00	29.77	76.27	8,422.40	204.34	613.03	14,446,352.88	1,707,619.69	39.77900862	-80.76080228
8,600.00	31.77	76.27	8,508.32	216.48	662.73	14,446,365.02	1,707,669.39	39.77904160	-80.76062529
8,700.00	33.77	76.27	8,592.40	229.32	715.30	14,446,377.87	1,707,721.96	39.77907649	-80.76043803
8,800.00	35.77	76.27	8,674.55	242.86	770.70	14,446,391.40	1,707,777.36	39.77911325	-80.76024073
8,900.00	37.77	76.27	8,754.65	257.06	828.84	14,446,405.61	1,707,835.51	39.77915184	-80.76003364
9,000.00	39.77	76.27	8,832.61	271.93	889.67	14,446,420.47	1,707,896.33	39.77919221	-80.75981700
9,055.62	40.88	76.27	8,875.01	280.47	924.64	14,446,429.01	1,707,931.30	39.77921541	-80.75969246
Begin 40.88° tangent									
9,100.00	40.88	76.27	8,908.57	287.36	952.85	14,446,435.90	1,707,959.51	39.77923413	-80.75959197
9,200.00	40.88	76.27	8,964.17	302.90	1,016.43	14,446,451.44	1,708,023.09	39.77927633	-80.75936552
9,300.00	40.88	76.27	9,059.78	318.43	1,080.01	14,446,466.97	1,708,086.67	39.77931852	-80.75913507
9,400.00	40.88	76.27	9,135.38	333.97	1,143.59	14,446,482.51	1,708,150.25	39.77936071	-80.75891262
9,500.00	40.88	76.27	9,210.99	349.50	1,207.17	14,446,498.04	1,708,213.83	39.77940290	-80.75868617
9,600.00	40.88	76.27	9,286.60	365.03	1,270.75	14,446,513.58	1,708,277.41	39.77944509	-80.75845971

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Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-18 HU RD (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+28 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia,	MD Reference:	RKB=1265+28 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,700.00	40.88	75.27	9,362.20	380.57	1,334.33	14,446,529.11	1,708,340.99	39.77948728	-80.75823326	
9,800.00	40.88	75.27	9,437.81	396.10	1,397.91	14,446,544.65	1,708,404.57	39.77952947	-80.75800681	
9,900.00	40.88	76.27	9,513.41	411.64	1,461.49	14,446,560.18	1,708,468.15	39.77957166	-80.75778036	
10,000.00	40.88	76.27	9,589.02	427.17	1,525.07	14,446,575.71	1,708,531.73	39.77961385	-80.75755391	
10,100.00	40.88	76.27	9,664.63	442.71	1,588.65	14,446,591.25	1,708,595.31	39.77965604	-80.75732746	
10,200.00	40.88	76.27	9,740.23	458.24	1,652.23	14,446,606.78	1,708,658.89	39.77969823	-80.75710100	
10,300.00	40.88	76.27	9,815.84	473.78	1,715.81	14,446,622.32	1,708,722.47	39.77974042	-80.75687455	
10,400.00	40.88	76.27	9,891.44	489.31	1,779.39	14,446,637.85	1,708,786.05	39.77978260	-80.75664810	
10,500.00	40.88	76.27	9,967.05	504.84	1,842.97	14,446,653.39	1,708,849.63	39.77982479	-80.75642164	
10,600.00	40.88	76.27	10,042.66	520.38	1,906.55	14,446,668.92	1,708,913.21	39.77986698	-80.75619519	
10,700.00	40.88	76.27	10,118.26	535.91	1,970.13	14,446,684.45	1,708,976.79	39.77990916	-80.75596874	
10,800.00	40.88	76.27	10,193.87	551.45	2,033.71	14,446,699.99	1,709,040.38	39.77995135	-80.75574228	
10,900.00	40.88	76.27	10,269.47	566.98	2,097.29	14,446,715.52	1,709,103.96	39.77999353	-80.75551583	
11,000.00	40.88	76.27	10,345.08	582.52	2,160.87	14,446,731.05	1,709,167.54	39.78003572	-80.75528937	
11,100.00	40.88	76.27	10,420.69	598.05	2,224.45	14,446,746.59	1,709,231.12	39.78007790	-80.75506292	
11,165.56	40.88	76.27	10,470.25	608.23	2,266.13	14,446,756.78	1,709,272.80	39.78010556	-80.75491446	
Begin 6°/100' build/turn										
11,200.00	40.03	73.37	10,496.46	614.08	2,287.70	14,446,762.62	1,709,294.36	39.78012145	-80.75483765	
11,300.00	37.99	64.39	10,574.22	636.61	2,346.32	14,446,785.15	1,709,352.98	39.78018288	-80.75462876	
11,400.00	36.70	54.73	10,653.79	667.19	2,398.52	14,446,815.74	1,709,405.18	39.78026646	-80.75444267	
11,500.00	36.22	44.65	10,734.28	705.50	2,443.73	14,446,854.04	1,709,450.39	39.78037134	-80.75428140	
11,600.00	36.60	34.56	10,814.83	751.11	2,481.44	14,446,899.66	1,709,488.10	39.78049832	-80.75414673	
11,700.00	37.80	24.83	10,894.55	803.53	2,511.24	14,446,952.07	1,709,517.91	39.78064004	-80.75404012	
11,800.00	39.76	15.76	10,972.57	862.17	2,532.82	14,447,010.71	1,709,539.48	39.78080093	-80.75396275	
11,900.00	42.36	7.52	11,048.02	926.40	2,545.93	14,447,074.95	1,709,552.59	39.78097723	-80.75391546	
12,000.00	45.49	0.13	11,120.09	995.52	2,550.42	14,447,144.06	1,709,557.09	39.78116700	-80.75389678	
12,100.00	49.04	353.55	11,187.98	1,068.76	2,546.26	14,447,217.30	1,709,552.92	39.78136817	-80.75391289	
12,125.41	50.00	351.99	11,204.48	1,087.93	2,543.83	14,447,236.47	1,709,550.49	39.78142084	-80.75392137	
Begin 8°/100' build/turn										
12,200.00	55.15	348.19	11,249.81	1,146.23	2,533.57	14,447,294.77	1,709,540.23	39.78158103	-80.75395730	
12,300.00	62.21	343.76	11,301.78	1,229.00	2,512.78	14,447,377.54	1,709,519.44	39.78180849	-80.75403049	
12,400.00	69.39	339.91	11,342.75	1,315.57	2,484.30	14,447,464.11	1,709,490.96	39.78204644	-80.75413101	
12,500.00	76.65	336.40	11,371.94	1,404.24	2,448.69	14,447,552.79	1,709,455.36	39.78229024	-80.75425689	
12,600.00	83.96	333.09	11,388.77	1,493.31	2,406.64	14,447,641.85	1,709,413.31	39.78253515	-80.75440570	
12,686.09	91.00	330.00	11,393.00	1,577.64	2,360.93	14,447,726.18	1,709,367.60	39.78276709	-80.75456758	
Begin 91.00° lateral										
12,700.00	91.00	330.00	11,392.93	1,581.03	2,358.98	14,447,729.57	1,709,365.64	39.78277641	-80.75457451	
12,800.00	91.00	330.00	11,391.18	1,667.61	2,308.98	14,447,816.16	1,709,315.65	39.78301458	-80.75475162	
12,900.00	91.00	330.00	11,389.44	1,754.20	2,258.99	14,447,902.74	1,709,265.65	39.78325275	-80.75492873	
13,000.00	91.00	330.00	11,387.70	1,840.79	2,209.00	14,447,989.33	1,709,215.66	39.78349092	-80.75510584	
13,100.00	91.00	330.00	11,385.95	1,927.38	2,159.00	14,448,075.92	1,709,165.66	39.78372909	-80.75528295	
13,200.00	91.00	330.00	11,384.21	2,013.97	2,109.01	14,448,162.51	1,709,115.67	39.78396726	-80.75546007	
13,300.00	91.00	330.00	11,382.46	2,100.56	2,059.01	14,448,249.10	1,709,065.67	39.78420543	-80.75563718	
13,400.00	91.00	330.00	11,380.72	2,187.14	2,009.02	14,448,335.69	1,709,015.68	39.78444360	-80.75581430	
13,500.00	91.00	330.00	11,378.97	2,273.73	1,959.02	14,448,422.27	1,708,965.69	39.78468177	-80.75599142	
13,600.00	91.00	330.00	11,377.23	2,360.32	1,909.03	14,448,508.86	1,708,915.69	39.78491994	-80.75616854	
13,700.00	91.00	330.00	11,375.48	2,446.91	1,859.04	14,448,595.45	1,708,865.70	39.78515811	-80.75634566	
13,800.00	91.00	330.00	11,373.74	2,533.50	1,809.04	14,448,682.04	1,708,815.70	39.78539628	-80.75652278	
13,900.00	91.00	330.00	11,372.00	2,620.09	1,759.05	14,448,768.63	1,708,765.71	39.78563444	-80.75669991	
14,000.00	91.00	330.00	11,370.25	2,706.67	1,709.05	14,448,855.22	1,708,715.71	39.78587261	-80.75687703	
14,100.00	91.00	330.00	11,368.51	2,793.26	1,659.06	14,448,941.80	1,708,665.72	39.78611078	-80.75705416	
14,200.00	91.00	330.00	11,366.76	2,879.85	1,609.06	14,449,028.39	1,708,615.73	39.78634895	-80.75723128	
14,300.00	91.00	330.00	11,365.02	2,966.44	1,559.07	14,449,114.98	1,708,565.73	39.78658711	-80.75740841	
14,400.00	91.00	330.00	11,363.27	3,053.03	1,509.08	14,449,201.57	1,708,515.74	39.78682528	-80.75758554	



Planning Report - Geographic

405102270

Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia.
 Site: Old Crow Pad
 Well: Old Crow N-19 HU RD (slot E)
 Wellbore: Original Hole
 Design: rev0

Local Co-ordinate Reference: Well Old Crow N-19 HU RD (slot E)
 TVD Reference: RKB=1265+26 @ 1291.00usft (Nabors B 23)
 MD Reference: RKB=1265+26 @ 1291.00usft (Nabors B 28)
 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
14,500.00	91.00	330.00	11,361.53	3,139.62	1,459.08	14,449,288.16	1,708,465.74	39.78706345	-80.757778267
14,600.00	91.00	330.00	11,359.78	3,226.20	1,409.09	14,449,374.75	1,708,415.75	39.78730181	-80.75793981
14,700.00	91.00	330.00	11,358.04	3,312.79	1,359.09	14,449,461.33	1,708,365.76	39.78753978	-80.75811694
14,800.00	91.00	330.00	11,356.30	3,399.36	1,309.10	14,449,547.92	1,708,315.76	39.78777794	-80.75829407
14,900.00	91.00	330.00	11,354.55	3,485.97	1,259.10	14,449,634.51	1,708,265.77	39.78801611	-80.75847121
15,000.00	91.00	330.00	11,352.81	3,572.56	1,209.11	14,449,721.10	1,708,215.77	39.78825427	-80.75864835
15,100.00	91.00	330.00	11,351.06	3,659.14	1,159.12	14,449,807.69	1,708,165.78	39.78849244	-80.75882548
15,200.00	91.00	330.00	11,349.32	3,745.73	1,109.12	14,449,894.27	1,708,115.78	39.78873060	-80.75900262
15,300.00	91.00	330.00	11,347.57	3,832.32	1,059.13	14,449,980.86	1,708,065.79	39.78896877	-80.75917976
15,400.00	91.00	330.00	11,345.83	3,918.91	1,009.13	14,450,067.45	1,708,015.80	39.78920893	-80.75935691
15,500.00	91.00	330.00	11,344.09	4,005.50	959.14	14,450,154.04	1,707,965.80	39.78944510	-80.75953405
15,600.00	91.00	330.00	11,342.34	4,092.09	909.14	14,450,240.63	1,707,915.81	39.78968326	-80.75971119
15,700.00	91.00	330.00	11,340.60	4,178.67	859.15	14,450,327.22	1,707,865.81	39.78992142	-80.75988834
15,800.00	91.00	330.00	11,338.85	4,265.26	809.16	14,450,413.80	1,707,815.82	39.79015958	-80.76006548
15,900.00	91.00	330.00	11,337.11	4,351.85	759.16	14,450,500.39	1,707,765.82	39.79039775	-80.76024263
16,000.00	91.00	330.00	11,335.36	4,438.44	709.17	14,450,586.98	1,707,715.83	39.79063591	-80.76041978
16,100.00	91.00	330.00	11,333.62	4,525.03	659.17	14,450,673.57	1,707,665.84	39.79087407	-80.76059693
16,200.00	91.00	330.00	11,331.87	4,611.62	609.18	14,450,760.16	1,707,615.84	39.79111223	-80.76077408
16,300.00	91.00	330.00	11,330.13	4,698.20	559.18	14,450,846.75	1,707,565.85	39.79135039	-80.76095124
16,400.00	91.00	330.00	11,328.39	4,784.79	509.19	14,450,933.33	1,707,515.85	39.79158856	-80.76112839
16,500.00	91.00	330.00	11,326.64	4,871.38	459.20	14,451,019.92	1,707,465.86	39.79182672	-80.76130554
16,600.00	91.00	330.00	11,324.90	4,957.97	409.20	14,451,106.51	1,707,415.86	39.79206488	-80.76148270
16,700.00	91.00	330.00	11,323.15	5,044.56	359.21	14,451,193.10	1,707,365.87	39.79230304	-80.76165986
16,800.00	91.00	330.00	11,321.41	5,131.15	309.21	14,451,279.69	1,707,315.88	39.79254120	-80.76183702
16,900.00	91.00	330.00	11,319.66	5,217.73	259.22	14,451,366.28	1,707,265.88	39.79277936	-80.76201418
17,000.00	91.00	330.00	11,317.92	5,304.32	209.22	14,451,452.86	1,707,215.89	39.79301752	-80.76219134
17,100.00	91.00	330.00	11,316.18	5,390.91	159.23	14,451,539.45	1,707,165.89	39.79325568	-80.76236850
17,200.00	91.00	330.00	11,314.43	5,477.50	109.24	14,451,626.04	1,707,115.90	39.79349384	-80.76254567
17,300.00	91.00	330.00	11,312.69	5,564.09	59.24	14,451,712.63	1,707,065.90	39.79373199	-80.76272283
17,400.00	91.00	330.00	11,310.94	5,650.68	9.25	14,451,799.22	1,707,015.91	39.79397015	-80.76290000
17,500.00	91.00	330.00	11,309.20	5,737.26	-40.75	14,451,885.81	1,706,965.92	39.79420831	-80.76307716
17,600.00	91.00	330.00	11,307.45	5,823.85	-90.74	14,451,972.39	1,706,915.92	39.79444647	-80.76325433
17,700.00	91.00	330.00	11,305.71	5,910.44	-140.74	14,452,058.98	1,706,865.93	39.79468463	-80.76343150
17,800.00	91.00	330.00	11,303.96	5,997.03	-190.73	14,452,145.57	1,706,815.93	39.79492278	-80.76360867
17,900.00	91.00	330.00	11,302.22	6,083.62	-240.72	14,452,232.16	1,706,765.94	39.79516094	-80.76378585
18,000.00	91.00	330.00	11,300.48	6,170.20	-290.72	14,452,318.75	1,706,715.94	39.79539910	-80.76396302
18,100.00	91.00	330.00	11,298.73	6,256.79	-340.71	14,452,405.33	1,706,665.95	39.79563725	-80.76414019
18,200.00	91.00	330.00	11,296.99	6,343.38	-390.71	14,452,491.92	1,706,615.96	39.79587541	-80.76431737
18,300.00	91.00	330.00	11,295.24	6,429.97	-440.70	14,452,578.51	1,706,565.96	39.79611356	-80.76449455
18,400.00	91.00	330.00	11,293.50	6,516.56	-490.70	14,452,665.10	1,706,515.97	39.79635172	-80.76467172
18,500.00	91.00	330.00	11,291.75	6,603.15	-540.69	14,452,751.69	1,706,465.97	39.79658988	-80.76484890
18,600.00	91.00	330.00	11,290.01	6,689.73	-590.68	14,452,838.28	1,706,415.98	39.79682803	-80.76502609
18,700.00	91.00	330.00	11,288.26	6,776.32	-640.68	14,452,924.86	1,706,365.98	39.79706619	-80.76520327
18,800.00	91.00	330.00	11,286.52	6,862.91	-690.67	14,453,011.45	1,706,315.99	39.79730434	-80.76538045
18,900.00	91.00	330.00	11,284.78	6,949.50	-740.67	14,453,098.04	1,706,266.00	39.79754249	-80.76555763
19,000.00	91.00	330.00	11,283.03	7,036.09	-790.66	14,453,184.63	1,706,216.01	39.79778065	-80.76573482
19,100.00	91.00	330.00	11,281.29	7,122.68	-840.66	14,453,271.22	1,706,166.01	39.79801880	-80.76591201
19,200.00	91.00	330.00	11,279.54	7,209.26	-890.65	14,453,357.81	1,706,116.01	39.79825696	-80.76608920
19,300.00	91.00	330.00	11,277.80	7,295.85	-940.64	14,453,444.39	1,706,066.02	39.79849511	-80.76626638
19,400.00	91.00	330.00	11,276.05	7,382.44	-990.64	14,453,530.98	1,706,016.02	39.79873326	-80.76644358
19,500.00	91.00	330.00	11,274.31	7,469.03	-1,040.63	14,453,617.57	1,705,966.03	39.79897141	-80.76662077
19,600.00	91.00	330.00	11,272.57	7,555.62	-1,090.63	14,453,704.16	1,705,916.04	39.79920957	-80.76679796
19,700.00	91.00	330.00	11,270.82	7,642.21	-1,140.62	14,453,790.75	1,705,866.04	39.79944772	-80.76697515
19,800.00	91.00	330.00	11,269.08	7,728.79	-1,190.62	14,453,877.34	1,705,816.05	39.79968587	-80.76715235
19,900.00	91.00	330.00	11,267.33	7,815.38	-1,240.61	14,453,963.92	1,705,766.05	39.79992402	-80.76732955



Planning Report - Geographic

Database: DB_Aug1919_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia.
Site: Old Crow Pad
Well: Old Crow N-19 HU RD (slot E)
Wellbore: Original Hole
Design: rev0

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

Well Old Crow N-19 HU RD (slot E)
RKB=1265+26 @ 1291.00usft (Nabors B 28)
RKB=1265+26 @ 1291.00usft (Nabors B 28)
Grid
Minimum Curvature

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Planned Survey

Table with 11 columns: Measured Depth (usft), Inclination (°), Azimuth (°), Vertical Depth (usft), +N-S (usft), +E-W (usft), Map Northing (usft), Map Easting (usft), Latitude, Longitude. It contains 28 rows of survey data points.



Planning Report - Geographic

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Old Crow N-19 HU RD (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Project:	Marshall County, West Virginia.	MD Reference:	RKB=1265+26 @ 1291.00usft (Nabors B 28)
Site:	Old Crow Pad	North Reference:	Grid
Well:	Old Crow N-19 HU RD (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
25,500.00	91.00	330.00	11,169.65	12,664.33	-4,040.29	14,458,812.87	1,702,966.37	39.81326006	-80.77725450	
25,600.00	91.00	330.00	11,167.90	12,750.91	-4,090.28	14,458,899.46	1,702,916.38	39.81349820	-80.77743177	
25,700.00	91.00	330.00	11,166.16	12,837.50	-4,140.28	14,458,986.04	1,702,866.39	39.81373633	-80.77760904	
25,800.00	91.00	330.00	11,164.41	12,924.09	-4,190.27	14,459,072.63	1,702,816.39	39.81397447	-80.77778831	
25,900.00	91.00	330.00	11,162.67	13,010.68	-4,240.27	14,459,159.22	1,702,766.40	39.81421260	-80.77796358	
26,000.00	91.00	330.00	11,160.92	13,097.27	-4,290.26	14,459,245.81	1,702,716.40	39.81445074	-80.77814085	
26,100.00	91.00	330.00	11,159.18	13,183.86	-4,340.25	14,459,332.40	1,702,666.41	39.81468887	-80.77831812	
26,200.00	91.00	330.00	11,157.44	13,270.44	-4,390.25	14,459,418.99	1,702,616.41	39.81492700	-80.77849539	
26,300.00	91.00	330.00	11,155.69	13,357.03	-4,440.24	14,459,505.57	1,702,566.42	39.81516514	-80.77867267	
26,400.00	91.00	330.00	11,153.95	13,443.62	-4,490.24	14,459,592.16	1,702,516.43	39.81540327	-80.77884994	
26,500.00	91.00	330.00	11,152.20	13,530.21	-4,540.23	14,459,678.75	1,702,466.43	39.81564141	-80.77902722	
26,600.00	91.00	330.00	11,150.46	13,616.80	-4,590.23	14,459,765.34	1,702,416.44	39.81587954	-80.77920450	
26,626.23	91.00	330.00	11,150.00	13,639.51	-4,603.34	14,459,788.05	1,702,403.32	39.81594200	-80.77925100	
PBHL/TD 26626.23 MD/11150.00 TVD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
BHL Old Crow N-19 HU - plan hits target center - Point	0.00	0.00	11,150.00	13,639.51	-4,603.34	14,459,788.05	1,702,403.32	39.81594200	-80.77925100	
Old Crow N-19 HU int - plan hits target center - Point	0.00	0.00	11,204.48	1,087.93	2,543.83	14,447,236.47	1,709,550.49	39.78142084	-80.75392137	
LP Old Crow N-19 HU rē - plan misses target center by 0.13usft at 12696.04usft MD (11393.00 TVD, 1577.60 N, 2360.96 E) - Point	0.00	0.00	11,393.00	1,577.54	2,360.84	14,447,726.08	1,709,367.50	39.78276681	-80.75456791	

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	
3,350.00	3,349.68	4.61	9.88	Begin 5.00° tangent	
6,211.21	6,200.00	110.00	235.89	Begin 2°/100' drop	
6,461.21	6,449.68	114.80	245.77	Begin vertical hold	
7,011.52	7,000.00	114.80	245.77	Begin 2°/100' build	
9,055.62	8,875.01	280.47	924.64	Begin 40.88° tangent	
11,165.56	10,470.25	608.23	2,266.13	Begin 6°/100' build/tum	
12,125.41	11,204.48	1,087.93	2,543.83	Begin 8°/100' build/tum	
12,696.09	11,393.00	1,577.54	2,360.93	Begin 91.00° lateral	
26,626.23	11,150.00	13,639.51	-4,603.34	PBHL/TD 26626.23 MD/11150.00 TVD	

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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 Powhatan Point 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 control

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWP-1021 / WVS100185) and Westmoreland Sanitary Landfill, LLC (SAN-1405 / PA DEP 6C01386425)

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

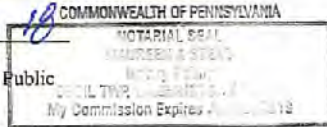
Company Official Title Vice President, Geoscience

Subscribed and sworn before me this 26 day of SEPT., 2010

Maureen A. Stead

Notary Public

My commission expires 4/28/19



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Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 19.18 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

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

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Jim Nicholson*

Comments:

Title: Oil and Gas Inspector Date: 2/20/19

Field Reviewed? (X) Yes () No

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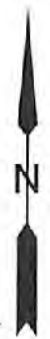
WW-9

PROPOSED OLD CROW N - 19HU

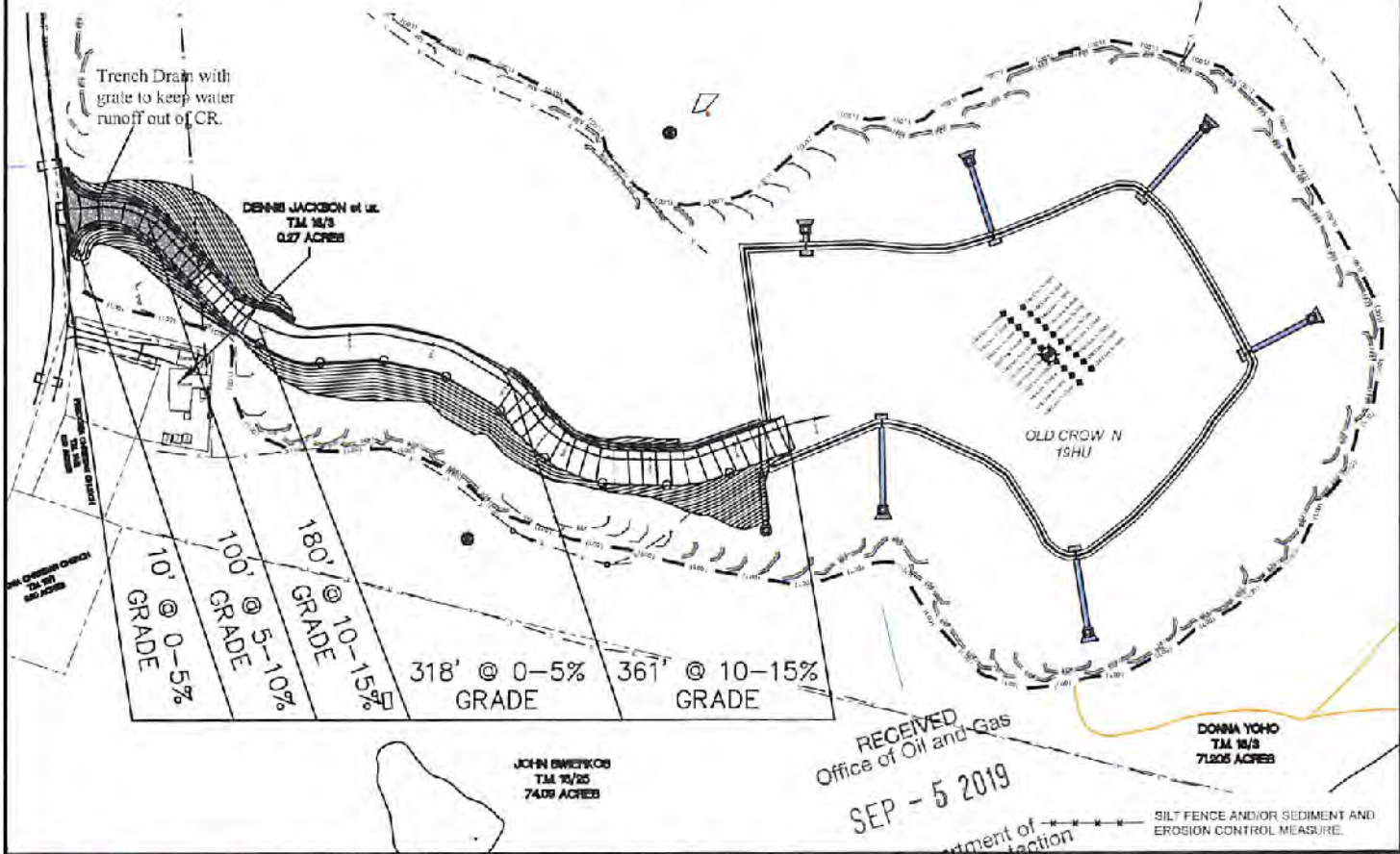
SUPPLEMENT PG. 1

NOTES:

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



DONNA YOHO
TM 15/3
71808 ACRES



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TOPO SECTION:		OPERATOR: WV Department of Environmental Protection	
POWHATAN POINT 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC	
COUNTY	DISTRICT	380 SOUTHPOINTE BLVD	
MARSHALL	FRANKLIN	SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8769	01/23/19	NONE

**TUG HILL
OPERATING**



Well Site Safety Plan

Tug Hill Operating, LLC

9/4/19

Well Name: Old Crow N-19HU

Pad Location: Old Crow Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing:

4,403,194.88 Easting:

520,296.67

Updated August 2019

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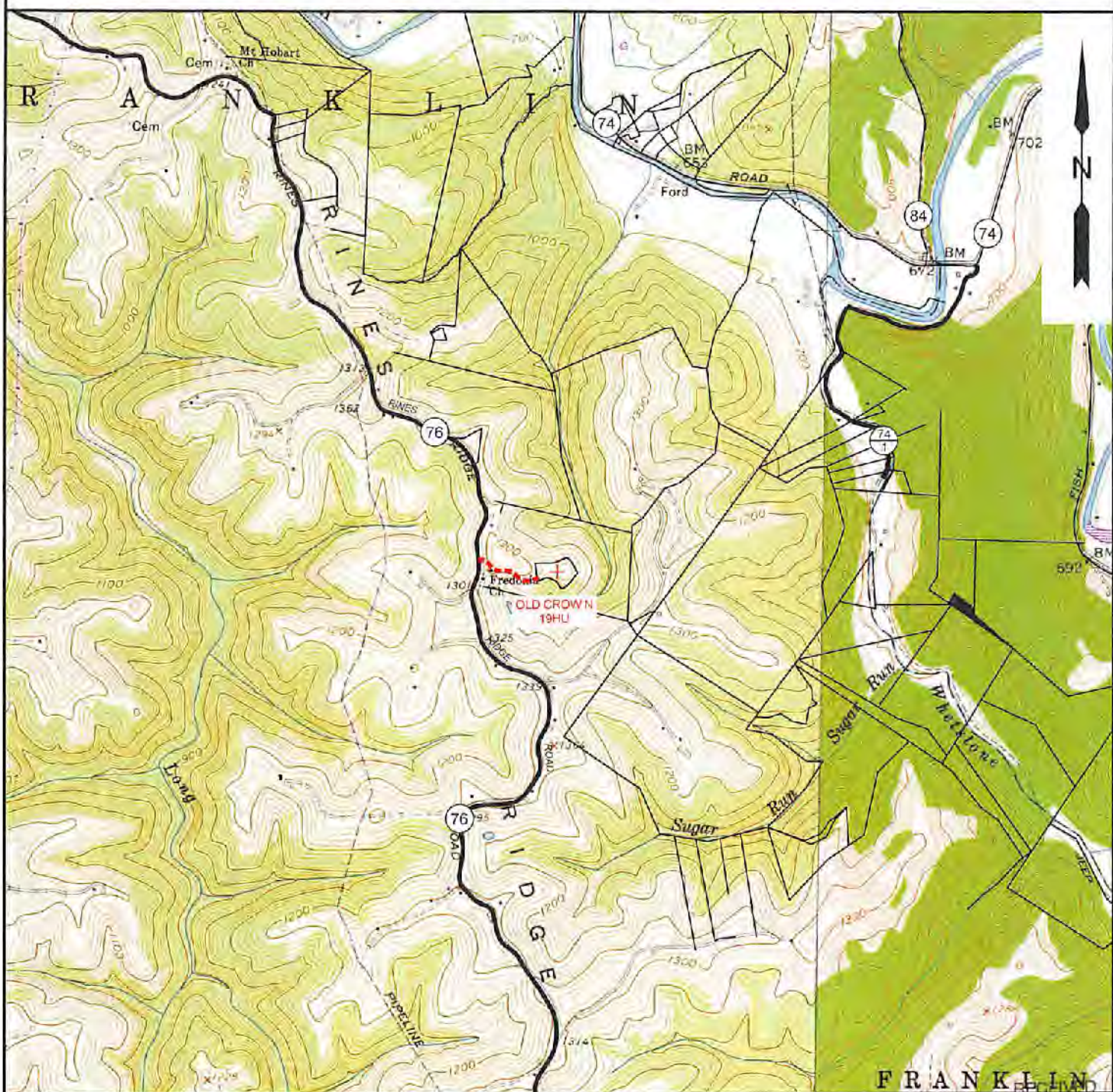
WV Department of
Environmental Protection

105102270

WW-9

PROPOSED OLD CROWN - 19HU

SUPPLEMENT PG. 2



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

LAT: 39.7137712
 LON: -80.8259327
 LOCATED: S 37°39'00" W AT 29,404.13' FROM OLD CROWN - 19HU SURFACE LOCATION

Office of Oil and Gas

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TOPO SECTION:		OPERATOR:	
GLEN EASTON & POWHATAN POINT 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	FRANKLIN	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8796	01/23/19	1" = 2000'

WV Department of Environmental Protection

TUG HILL OPERATING

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC ±
WELL 19HU
TUG HILL OPERATING**

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

LINE	BEARING	DISTANCE
L1	N 65°57' E	271.26'
L2	N 66°49' W	1292.05'
L3	S 82°14' W	1001.05'

MND 20 AD
47-051-02011
MND 20 BU
47-051-02012

NAD 83 GRID NORTH

TAG	SURFACE OWNER	PARCEL	ACRES
A	JOHN SWIBKOS	5-16-25	79.04
B	DONNA VIVIAN YOHO - TOD	5-16-3	71.203
C	JOHN SWIBKOS	5-16-16	160.09
D	JOHN SWIBKOS	5-16-5	32.07
E	JOHN SWIBKOS	5-16-6	134.05
F	LOUIS AULONBACHER	5-10-22	6.461
G	JOHN PAUL BIRDA, JR. ET AL	5-10-21	8.86
H	LOUIS DELBERT VAN SOYOC	5-10-10	24.30
I	HERBERT M. AULONBACHER, JR.	5-10-9	141.43
J	HERBERT M. AULONBACHER, JR.	5-10-3	725.50
K	FISH CREEK WV DIVISION OF NATURAL RESOURCES	87A	70A
L	JANON J. STEED	5-9-13.2	135.61
M	WILLIAM FRASER, ET AL	5-10-2	52.38
N	EDWIN C. MILLER	5-9-20	51.54
O	EDWIN C. MILLER	5-10-1	49.86
P	JOHN E. KAZEMKA	5-9-27	4.02
Q	EDWIN C. MILLER	5-9-26	1.00
R	ALBERT P. KAZEMKA	5-9-22	0.50
S	ALBERT P. KAZEMKA	5-9-21	100 PCL
T	MARK S. STOCKLASK	5-9-17.1	1.187
U	MALCOLM E. BROWLER, ET AL	5-9-18	25,809.92 PCL
V	DENNIS P. CADMUS	5-9-42	5.42
W	MARK STEPHEN STOCKLASK	5-9-19	2.38
X	DELBERT K. & LINDA E. MYERS	5-9-23	7.01
Y	DELBERT K. & LINDA E. MYERS	5-9-25	14.49
Z	DENNIS P. CADMUS	5-9-24	21AC 499
AA	DENNIS P. CADMUS	5-9-29	9.50
BB	KEITH D. DANIELS, ET UX	5-9-33	40.331
CC	LLOYD C. & JUDITH C. ARNOLD	5-9-41	93.00
DD	LLOYD C. & JUDITH C. ARNOLD	5-9-4	18.854
EE	SAMUEL L. CANTERBURY, ET UX	5-9-4.19	2.075
FF	SAMUEL L. CANTERBURY, ET UX	5-9-4.17	0.500
GG	PAUL G. BROWN	5-9-4.18	0.657
HH	PAUL G. BROWN	5-9-4.15	0.500
II	PAUL G. BROWN	5-9-4.14	0.500
JJ	DEBORAH S. MIDCAP	5-9-4.10	0.812
KK	LLOYD C. & JUDITH C. ARNOLD	5-9-35	47.01
LL	THOMAS MIDCAP, ET UX	5-9-4.5	0.376
MM	GEORGE P. MINOIL, ET AL - LIFE	5-9-33.1	0.641
NN	JAMES R. LEROY ESTATE	5-9-2	23.141
OO	KENNETH E. WHITE, ET UX	5-9-2.2	0.357
PP	JESSIE L. LEROY ESTATE	5-9-2.1	20.5
QQ	EDWIN C. MILLER	5-9-7	180.31

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P.S. 849 *C. Victor Moyers*

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	205.07'	376.99'	N 62°15' E	202.55'
C2	247.60'	382.13'	N 25°47' E	243.48'
C3	263.15'	707.40'	N 03°49' W	261.64'
C4	424.74'	1392.49'	N 21°43' W	423.48'

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)			
NAD83 S.P.C.(FT)	N. 498,146.82	E. 1,613,548.58	
NAD83 GEO.	LAT-(N) 39.779452	LONG-(W) 80.762886	
NAD83 UTM (M)	N. 4,403,194.88	E. 520,296.67	
LANDING POINT			
NAD83 S.P.C.(FT)	N. 499,985.4	E. 1,615,896.3	
NAD83 GEO.	LAT-(N) 39.782767	LONG-(W) 80.754508	
NAD83 UTM (M)	N. 4,403,675.7	E. 521,016.3	
BOTTOM HOLE			
NAD83 S.P.C.(FT)	N. 491,866.1	E. 1,609,172.2	
NAD83 GEO.	LAT-(N) 39.815042	LONG-(W) 80.779251	
NAD83 UTM (M)	N. 4,407,352.2	E. 518,893.8	



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

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

SCALE 1" = 2000' FILE NO. 8786P19HUR3.dwg
 DATE FEBRUARY 22, 2019
 REVISED 04/25/19, 05/14/19, 08/28/19
 OPERATORS WELL NO. OLD CROW N-19HU
 API WELL NO. 47-051-02270
 NO. STATE COUNTY PERMIT

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

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

COUNTY NAME PERMIT

**OLD CROW N LEASE
UTICA UNIT - 484.05 AC±
WELL 19HU
TUG HILL OPERATING**

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

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

NAD'83 S.P.C.(FT)	N. 488,148.92	E. 1,613,548.58
NAD'83 GEO.	LAT-(N) 39.778452	LONG-(W) 80.782896
NAD'83 UTM (M)	N. 4,403,194.88	E. 520,296.67

LANDING POINT

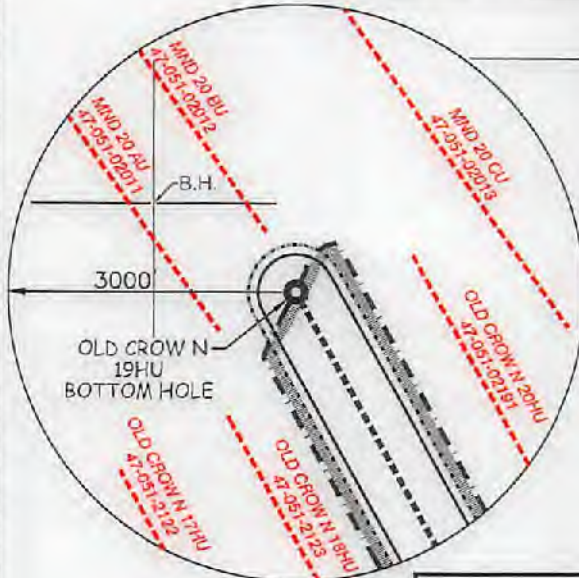
NAD'83 S.P.C.(FT)	N. 489,685.4	E. 1,615,935.3
NAD'83 GEO.	LAT-(N) 39.782767	LONG-(W) 80.754668
NAD'83 UTM (M)	N. 4,403,675.7	E. 521,016.3

BOTTOM HOLE

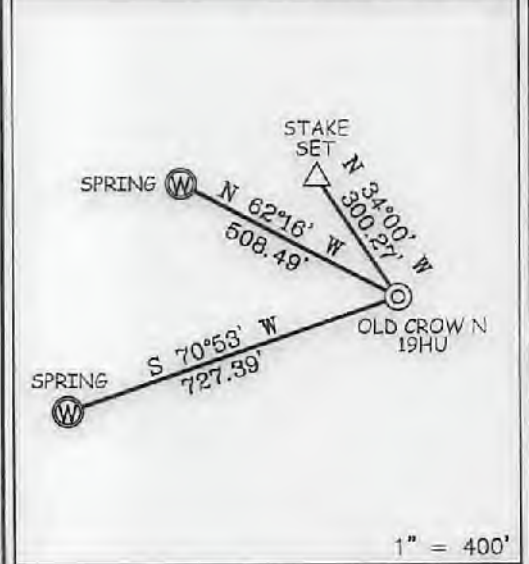
NAD'83 S.P.C.(FT)	N. 481,866.1	E. 1,609,172.2
NAD'83 GEO.	LAT-(N) 39.815942	LONG-(W) 80.779251
NAD'83 UTM (M)	N. 4,407,352.2	E. 518,899.6

T.H. LONGITUDE 80°45'00"
B.H. LONGITUDE 80°45'00"

MAP/PARCEL	ADJOINING SURFACE OWNER LIST	ACRES
5-9-4.3	HARRY E. JR. & MICHELA KARR	1.471
5-9-4.5	DYLAN AULENBACHER	0.991
5-9-4.7	FRANCIS D. BARR, ET UX	0.481
5-9-4.9	THOMAS MIDCAP, ET UX	0.375
5-9-4.11	GARY PORTER	1.00
5-9-4.12	SAMUEL L. & DEBRA N. CANTERBURY	0.650
5-9-4.13	SAMUEL LEE CANTERBURY, ET UX	0.9284
5-9-4.16	SAMUEL L. & DEBRA N. CANTERBURY	0.517
5-9-13	KAREN M. KAZEMKA (N.K.A. KAREN M. WILSON)	3.69
5-9-14	DENNIS P. CADMUS	136 POLES
5-9-15	DENNIS P. CADMUS	3.85
5-9-16	SHEENA ROSE	1.05
5-9-17	DENNIS P. CADMUS	28.063
5-9-28	WILLIAM N. & DELORES E. MCDONOUGH - LIFE	4.01
5-9-29	JAMES M. & ROBERT A. L. STERN	3.1777
5-9-30	MATTHEW B. GRIFFITH	2.708
5-9-30.1	DAVID JR. & MELISSA LOVE	2.518
5-9-30.3	MATTHEW B. GRIFFITH	0.82
5-9-32	MILLARD JUNIOR BONNETTE, ET UX	2.321
5-9-32.3	RUBY M. HENRY ESTATE	0.552
5-9-32.4	DAVID D. & CHRISTINE S. DANIELS	1.025
5-9-32.5	GARNET D. MIDCAP	270±390'
5-9-32.8	TIMOTHY Q. HOYT, ET UX	0.711
5-9-32.10	TIMOTHY Q. HOYT, ET UX	0.588
5-9-32.11	TIMOTHY Q. HOYT, ET UX	1.717
5-9-32.12	JOHN DRAKE ALBAUGH	1.09
5-9-33.1	KEITH D. & BEVERLY A. DANIELS	1.00
5-9-33.2	KEITH D. & BEVERLY A. DANIELS	1.534
5-9-33.4	DAVID D. & CHRISTINE S. DANIELS	1.025
5-9-36	FRANK T. & ANNA M. WALKER	1.55
5-9-37	FRANK T. & ANNA M. WALKER	10.857
5-9-38	SHIRLEY A. HILL ESTATE	3.331
5-9-38.10	ROBERT S. COWGILL	0.920
5-9-40	SHIRLEY A. HILL ESTATE	3.92
5-10-4.2	JACK E. RECTOR	2.887
5-10-4.3	ANTHONY A. & KAREN L. ANKROM	5.697
5-10-4.7	LINDA BECHTOLD, ET AL	2.110
5-10-4.8	SAMUEL FRANKLIN	1.898
5-10-4.9	JAMES E. KAREN M. WILSON	0.8692
5-10-4.10	SHEENA ROSE	0.803
5-10-4.11	JASON E. BONNETTE	1.50
5-10-11	JOSEPH LEE CROW	LOT
5-10-19	BRADLEY L. & CONNIE I. HUBBARD	3.209
5-10-20	LOUIS AULENBACHER	3.554
5-10-21	LOUIS AULENBACHER	3.667



REFERENCES



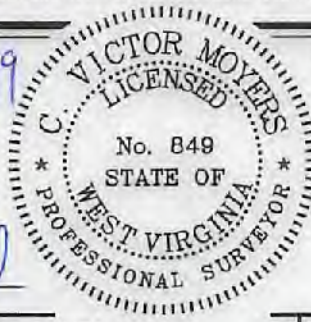
NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE ARE 1"=2000'
- PROPOSED LATERAL OR TOP HOLE OF OLD CROW N-19HU (47-051-02190) IS WITHIN 3000' OF THE TOP HOLES OR LATERALS OF EXISTING WELLS BRYAN N 13HU (47-051-02030), BRYAN N 14HU (47-051-02031), OLD CROW N-17HU (47-051-02122), OLD CROW N-18HU (47-051-02123), MND20 AU (47-051-02011), MND20 BU (47-051-02012), MND20 CU (47-051-02013), MND20 DJ (47-051-02014) & PROPOSED OLD CROW N-20HU (47-051-02191).
- THE ASSESSMENT OF THE 1/10 ACRE LOT, OWNED BY JASON J. STEED AND DESCRIBED AS THE SECOND PARCEL IN DEED BOOK 643 PAGE 319 AND CORRECTIVE DEED 843 PAGE 300, IS NOT CURRENTLY ACCOUNTED FOR WITHIN THE 135.61 ACRE ASSESSMENT OF SURFACE TAX MAP 5-9-13.2
- THIS PLAT WAS CREATED FOR REVISED BOREHOLE PERMIT.

P.O. Box 150 • 12 Vashon Drive • Glenville, WV 26031 • (304) 462-5834
www.slsww.com

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

P.S. 849 *C. Victor Moyers*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE FEBRUARY 22, 20 19
REVISED 04/25/19, 05/14/19, 08/28/19
OPERATORS WELL NO. OLD CROW N-19HU
API WELL NO. 47 - 051 - 02270
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 8796P19HUR3.dwg
OLD CROW NORTH 19HU REV0
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 INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: GROUND = 1,286.80' ELEVATION PROPOSED = 1,264.99' WATERSHED TRIBUTARY OF FISH CREEK (HUC-10)

DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE POWHATAN POINT 7.5'

SURFACE OWNER DONNA VIVIAN YOHO (TOD) GARY LANCE YOHO ACREAGE 71.205±

ROYALTY OWNER DONNA VIVIAN YOHO, ET AL - SEE ADDITIONAL SHEETS ACREAGE 71.205±

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

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION POINT PLEASANT ESTIMATED DEPTH TVD: 11,614' / TMD: 26,626'

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

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Old Crow N-19HU

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

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

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

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

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

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

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

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

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

4705100070

Operator's Well No. Old Crow N - 19HU

WW-6A1 Supplement

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*21468	5-16-25	A	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*19340	5-16-3	B	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	Gastar Exploration USA Inc to Atinum Marcellus I LLC: 23/353	Gastar & Atinum to AB Resources LLC: 23/617	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000: 24/319	Chief, Chief Oil & Gas LLC, Radler & Enerplus Resources (USA) Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to Chevron USA Inc: 756/397	Chevron USA Inc to TH Exploration II LLC: 40/57
10*14920	5-10-14	C	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	119	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*14919	5-16-5	D	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	117	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9
10*21468	5-16-6	E	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*18396	5-10-22	F	LOUIS AULENBACHER	TH EXPLORATION LLC	1/8+	932	468	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-22	F	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-12.1	G	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.1	5-10-12.1	G	WILLIAM HUBBARD	TH EXPLORATION LLC	1/8+	882	536	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.2	5-10-12.1	G	BONNIE G ZELIC	TH EXPLORATION LLC	1/8+	882	539	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.3	5-10-12.1	G	JOHN P SMITH JR	TH EXPLORATION LLC	1/8+	882	542	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.261.4	5-10-12.1	G	BRADLEY L HUBBARD AND CONNIE L HUBBARD	TH EXPLORATION LLC	1/8+	898	573	N/A	N/A	N/A	N/A	N/A	N/A
10*21468	5-10-10	H	JOHN A SWIERKOS	TH EXPLORATION LLC	1/8+	953	317	N/A	N/A	N/A	N/A	N/A	N/A
10*22295	5-10-10	H	RACHEL B OSTRANDER	FOSSIL CREEK OHIO, LLC	1/8+	822	210	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corp.: 34/366	Gulfport Energy Corp & Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588	American Petroleum Partners Operating LLC to TH Exploration LLC: 40/408
10*22319	5-10-10	H	SHARON G VAN SCYOC	FOSSIL CREEK OHIO, LLC	1/8+	822	204	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corp.: 34/366	Gulfport Energy Corp & Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588	American Petroleum Partners Operating LLC to TH Exploration LLC: 40/408
10*26004	5-10-10	H	VAN SCYOC LOUIS ET UX	AB RESOURCES LLC	1/8+	697	461	N/A	AB Resources LLC to NPAR LLC: 25/484	AB resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/382	Chief Exploration & Development LLC & Radler 2000 LP, et al to Chevron USA Inc: 25/1 & 25/105	NPAR LLC to Chevron USA Inc: 765/332	Chevron USA Inc to TH Exploration LLC: 43/95
10*19249	5-10-9	I	HERBERT M AULENBACHER	CHEVRON USA INC	1/8+	914	551	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*14918	5-10-3	J	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	836	115	N/A	N/A	N/A	N/A	Gastar Exploration Inc to Atinum Marcellus I LLC: 32/428	Gastar Exploration Inc to TH Exploration II LLC: 36/9

WW-6A1 Supplement

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
Q091960000	FISH CREEK	K	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	NOBLE ENERGY INC	1/8+	865	558	N/A	N/A	N/A	N/A	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286 ✓
10*47051.170.0	5-9-13.2	L	JASON J STEED	TH EXPLORATION LLC	1/8+	865	344	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.260.0	5-10-2	M	WILLIAM A PRASCIK ET AL	TH EXPLORATION LLC	1/8+	879	302	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.1	5-9-20	N	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885	61	N/A	N/A	N/A	N/A	N/A	N/A
10*18970	5-10-1	O	DONALD E BERISFORD	TH EXPLORATION LLC	1/8+	941	287	N/A	N/A	N/A	N/A	N/A	N/A
10*19036	5-10-1	O	HAROLD W HOWARD JR	CHEVRON USA INC	1/8+	813	91	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19037	5-10-1	O	NEVELLE SEELEY	CHEVRON USA INC	1/8+	813	116	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19039	5-10-1	O	RALPH B RUSSELL MARY ANN RUSSELL	CHEVRON USA INC	1/8+	813	106	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19040	5-10-1	O	RUTHANNE RUSSELL TOPPING	CHEVRON USA INC	1/8+	813	79	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19041	5-10-1	O	CHERYL L HILL	CHEVRON USA INC	1/8+	813	101	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19043	5-10-1	O	JACK R BERISFORD LINDA JO BERISFORD	CHEVRON USA INC	1/8+	813	96	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19045	5-10-1	O	JOHN W MURDOCK HELEN CAROLINA MURDOCK	CHEVRON USA INC	1/8+	814	327	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19049	5-10-1	O	RUTH ANN FERRIS	CHEVRON USA INC	1/8+	814	313	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19050	5-10-1	O	LARRY F JEFFERSON CATHY L JEFFERSON	CHEVRON USA INC	1/8+	814	473	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19059	5-10-1	O	MARY VANESSA GILSON	CHEVRON USA INC	1/8+	815	464	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19060	5-10-1	O	ALYSIA JORDAN	CHEVRON USA INC	1/8+	815	135	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19503	5-10-1	O	FRANK DALE BERISFORD AND KATHLEEN BERISFORD	TH EXPLORATION LLC	1/8+	942	625	N/A	N/A	N/A	N/A	N/A	N/A
10*19610	5-10-1	O	BRENT BERISFORD AND JEAN MARIE COSTA	TH EXPLORATION LLC	1/8+	944	207	N/A	N/A	N/A	N/A	N/A	N/A
10*22637	5-10-1	O	HOWARD T CONNER AND NANETTE CONNER	TH EXPLORATION LLC	1/8+	968	219	N/A	N/A	N/A	N/A	N/A	N/A
10*22639	5-10-1	O	EDWIN MARK KNABENSHUE	TH EXPLORATION LLC	1/8+	968	217	N/A	N/A	N/A	N/A	N/A	N/A
10*22640	5-10-1	O	JESSICA M CREMEANS	TH EXPLORATION LLC	1/8+	984	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22641	5-10-1	O	CHRISTOPHER STALEY & MICHAEL ANNE STALEY	TH EXPLORATION LLC	1/8+	968	221	N/A	N/A	N/A	N/A	N/A	N/A
10*22772	5-10-1	O	BILLIE J STALEY AND APRIL STALEY	TH EXPLORATION LLC	1/8+	970	8	N/A	N/A	N/A	N/A	N/A	N/A
10*23040	5-10-1	O	MARY L WHITTINGTON	TH EXPLORATION LLC	1/8+	977	300	N/A	N/A	N/A	N/A	N/A	N/A
10*23725	5-10-1	O	GRAYSVILLE CALVARY UNITED METHODIST	TH EXPLORATION LLC	1/8+	1011	550	N/A	N/A	N/A	N/A	N/A	N/A
10*24029	5-10-1	O	MICHAEL L STEWART	TH EXPLORATION LLC	1/8+	1020	353	N/A	N/A	N/A	N/A	N/A	N/A
10*24261	5-10-1	O	GREG STEWART	TH EXPLORATION LLC	1/8+	1020	351	N/A	N/A	N/A	N/A	N/A	N/A
10*24514	5-10-1	O	GAYLE F BRITTON TRUST	TH EXPLORATION LLC	1/8+	1026	253	N/A	N/A	N/A	N/A	N/A	N/A
10*24515	5-10-1	O	AARON M BROWN	TH EXPLORATION LLC	1/8+	1024	269	N/A	N/A	N/A	N/A	N/A	N/A
10*24525	5-10-1	O	DAVID E BOWYER	TH EXPLORATION LLC	1/8+	1027	285	N/A	N/A	N/A	N/A	N/A	N/A
10*24554	5-10-1	O	JOSH D AND LAUREN K HALE	TH EXPLORATION LLC	1/8+	1024	254	N/A	N/A	N/A	N/A	N/A	N/A
10*24555	5-10-1	O	DAVID W HALE JR	TH EXPLORATION LLC	1/8+	1024	257	N/A	N/A	N/A	N/A	N/A	N/A
10*24556	5-10-1	O	BETTY L KEAN	TH EXPLORATION LLC	1/8+	1024	263	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.1	5-10-1	O	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885	61	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.2	5-10-1	O	JANE S BLANEY	TH EXPLORATION LLC	1/8+	898	547	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.3	5-10-1	O	JOANNE SCHALL FOSTER	TH EXPLORATION LLC	1/8+	895	29	N/A	N/A	N/A	N/A	N/A	N/A

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10*47051.127.4	5-10-1	O	RAYMOND E SCHALL	TH EXPLORATION LLC	1/8+	898 550	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.5	5-10-1	O	FIRST CHRISTIAN CHURCH OF MOUNDSVILLE BY ROGER FRANCIS AND ROBERT ALBERT TRUSTEES	TH EXPLORATION LLC	1/8+	898 600	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.6	5-10-1	O	BARBARA GODWIN AND CHARLES RODNEY GODWIN	TH EXPLORATION LLC	1/8+	902 419	N/A	N/A	N/A	N/A	N/A	N/A
PENDING	5-10-1	O	FORREST O MILLER	HG ENERGY II APPALACHIA, LLC	1/8+	1029 581	N/A	N/A	N/A	N/A	N/A	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*25617	5-10-1	O	GLEN DALE UNITED METHODIST CHURCH	AMERICAN PETROLEUM PARTNERS OPERATING LLC	1/8+	1031 610	N/A	N/A	N/A	N/A	N/A	American Petroleum Partners Operating LLC to TH Exploration LLC: Recordation Pending
10*17512	5-9-27	P	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917 68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-27	P	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916 208	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-27	P	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927 167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-27	P	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943 10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-27	P	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*18836	5-9-27	P	JOHN W MIDCAP AND ELDA FAYE MIDCAP	TH EXPLORATION LLC	1/8+	941 450	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-27	P	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943 12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-27	P	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-27	P	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-27	P	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-27	P	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-27	P	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-27	P	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-27	P	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-27	P	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-27	P	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-27	P	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-27	P	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-27	P	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-27	P	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-27	P	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-27	P	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-27	P	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 562	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-27	P	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-27	P	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-27	P	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q090332007	5-9-27	P	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-26	Q	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917 68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-26	Q	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916 208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-26	Q	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-26	Q	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927 167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-26	Q	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943 10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-26	Q	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-26	Q	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943 12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-26	Q	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-26	Q	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-26	Q	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-26	Q	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-26	Q	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-26	Q	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-26	Q	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-26	Q	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-26	Q	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-26	Q	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-26	Q	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-26	Q	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-26	Q	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-26	Q	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-26	Q	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-26	Q	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.127.1	5-9-26	Q	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	885 61	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-26	Q	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-26	Q	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-26	Q	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-22	R	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917 68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-22	R	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916 208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-22	R	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916 129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-22	R	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927 167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-22	R	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943 10	N/A	N/A	N/A	N/A	N/A	N/A

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10*18796	5-9-22	R	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*19107	5-9-22	R	ALBERT F KAZEMKA	CHEVRON USA INC	1/8+	853 73	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 40/127
10*19572	5-9-22	R	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943 12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-22	R	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-22	R	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-22	R	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-22	R	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-22	R	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-22	R	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-22	R	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-22	R	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-22	R	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-22	R	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-22	R	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-22	R	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-22	R	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-22	R	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-22	R	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-22	R	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-22	R	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-22	R	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-22	R	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-21	S	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-21	S	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959 310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-21	S	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957 232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-21	S	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957 124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-21	S	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-21	S	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-21	S	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-21	S	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959 313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-21	S	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-21	S	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962 572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-21	S	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-21	S	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-21	S	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961 417	N/A	N/A	N/A	N/A	N/A	N/A

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10*22296	5-9-21	S	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-21	S	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-21	S	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-21	S	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-21	S	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-21	S	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-21	S	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-21	S	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-21	S	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-21	S	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-21	S	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-21	S	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-21	S	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-21	S	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-21	S	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-21	S	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-21	S	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-21	S	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-21	S	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-17.1	T	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-17.1	T	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959	310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-17.1	T	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957	232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-17.1	T	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957	124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-17.1	T	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-17.1	T	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952	370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-17.1	T	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952	386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-17.1	T	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959	313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-17.1	T	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952	389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-17.1	T	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962	572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-17.1	T	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-17.1	T	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-17.1	T	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961	417	N/A	N/A	N/A	N/A	N/A	N/A

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Operator's Well No. Old Crow N - 19HU

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*22296	5-9-17.1	T	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-17.1	T	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-17.1	T	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-17.1	T	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-17.1	T	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964 31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-17.1	T	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-17.1	T	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-17.1	T	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964 233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-17.1	T	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-17.1	T	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-17.1	T	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-17.1	T	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-17.1	T	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-17.1	T	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-17.1	T	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-17.1	T	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858 256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-17.1	T	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-17.1	T	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-17.1	T	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-18	U	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-18	U	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959 310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-18	U	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957 232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-18	U	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957 124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-18	U	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-18	U	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-18	U	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-18	U	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959 313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-18	U	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-18	U	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962 572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-18	U	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-18	U	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-18	U	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961 417	N/A	N/A	N/A	N/A	N/A	N/A

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10*22296	5-9-18	U	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-18	U	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962 532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-18	U	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962 575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-18	U	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964 510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-18	U	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964 31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-18	U	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972 50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-18	U	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966 628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-18	U	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964 233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-18	U	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966 469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-18	U	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968 226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-18	U	DEAN S CARR	TH EXPLORATION LLC	1/8+	977 364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-18	U	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009 98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-18	U	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027 187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-18	U	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027 558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-18	U	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031 544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-18	U	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858 256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-18	U	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860 538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-18	U	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860 555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-18	U	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860 568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-42	V	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938 476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-42	V	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959 310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-42	V	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957 232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-42	V	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957 124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-42	V	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960 173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-42	V	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952 370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-42	V	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952 386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-42	V	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959 313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-42	V	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952 389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-42	V	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962 572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-42	V	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960 33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-42	V	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960 421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-42	V	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961 417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-42	V	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962 200	N/A	N/A	N/A	N/A	N/A	N/A

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10*22326	5-9-42	V	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-42	V	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-42	V	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-42	V	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-42	V	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-42	V	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-42	V	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-42	V	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-42	V	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-42	V	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-42	V	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-42	V	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-42	V	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	562	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-42	V	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-42	V	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-42	V	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-42	V	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-42	V	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*18796	5-9-19	W	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*21414	5-9-19	W	CHARLES R STOCKTON AND BETTY M HUDSON	TH EXPLORATION LLC	1/8+	959	310	N/A	N/A	N/A	N/A	N/A	N/A
10*21473	5-9-19	W	MARY E BISHOP	TH EXPLORATION LLC	1/8+	957	232	N/A	N/A	N/A	N/A	N/A	N/A
10*21475	5-9-19	W	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	957	124	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-19	W	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21547	5-9-19	W	GARY A MILLER AND MARCELLE T MILLER	TH EXPLORATION LLC	1/8+	952	370	N/A	N/A	N/A	N/A	N/A	N/A
10*21548	5-9-19	W	JEANNE M MILLER	TH EXPLORATION LLC	1/8+	952	386	N/A	N/A	N/A	N/A	N/A	N/A
10*21608	5-9-19	W	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	959	313	N/A	N/A	N/A	N/A	N/A	N/A
10*21719	5-9-19	W	ROBERT A MILLER	TH EXPLORATION LLC	1/8+	952	389	N/A	N/A	N/A	N/A	N/A	N/A
10*21835	5-9-19	W	KENNETH ALLEN AND CARLA JO ALLEN	TH EXPLORATION LLC	1/8+	962	572	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-19	W	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-19	W	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22045	5-9-19	W	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	961	417	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-19	W	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-19	W	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A

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10*22407	5-9-19	W	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-19	W	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22451	5-9-19	W	GERALD L BISHOP III	TH EXPLORATION LLC	1/8+	964	31	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-19	W	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-19	W	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22566	5-9-19	W	KENNETH A MILLER	TH EXPLORATION LLC	1/8+	964	233	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-19	W	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-19	W	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-19	W	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-19	W	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-19	W	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-19	W	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-19	W	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332001	5-9-19	W	WILLIAM E MILLER AND KAREN S MILLER	NOBLE ENERGY INC	1/8+	858	256	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332002	5-9-19	W	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-19	W	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-19	W	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-23	X	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917	68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-23	X	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916	208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-23	X	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916	129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-23	X	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927	167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-23	X	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943	10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-23	X	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-23	X	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943	12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-23	X	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-23	X	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-23	X	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-23	X	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-23	X	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-23	X	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-23	X	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A

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10*22492	5-9-23	X	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-23	X	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-23	X	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-23	X	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-23	X	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-23	X	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-23	X	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-23	X	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25250	5-9-23	X	LINDA KAY MYERS	TH EXPLORATION LLC	1/8+	1030	118	N/A	N/A	N/A	N/A	N/A	N/A
10*25488	5-9-23	X	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-23	X	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-23	X	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-23	X	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*17512	5-9-25	Y	BONNIE LOU POSTLEWAIT	TH EXPLORATION LLC	1/8+	917	68	N/A	N/A	N/A	N/A	N/A	N/A
10*17530	5-9-25	Y	WOODROW N WARD AND HILDA A WARD	TH EXPLORATION LLC	1/8+	916	208	N/A	N/A	N/A	N/A	N/A	N/A
10*17600	5-9-25	Y	CARLA JO ALLEN AND KENNETH ALLEN	TH EXPLORATION, LLC	1/8+	916	129	N/A	N/A	N/A	N/A	N/A	N/A
10*17916	5-9-25	Y	MARY E BISHOP	TH EXPLORATION LLC	1/8+	927	167	N/A	N/A	N/A	N/A	N/A	N/A
10*18270	5-9-25	Y	GERALD L BISHOP III	TH EXPLORATION, LLC	1/8+	943	10	N/A	N/A	N/A	N/A	N/A	N/A
10*18796	5-9-25	Y	DWG OIL & GAS ACQUISITIONS LLC	TH EXPLORATION LLC	1/8+	938	476	N/A	N/A	N/A	N/A	N/A	N/A
10*19572	5-9-25	Y	DOUGLAS R BISHOP	TH EXPLORATION LLC	1/8+	943	12	N/A	N/A	N/A	N/A	N/A	N/A
10*21478	5-9-25	Y	CHILDRENS HOME SOCIETY OF WEST VIRGINIA	TH EXPLORATION LLC	1/8+	960	173	N/A	N/A	N/A	N/A	N/A	N/A
10*21937	5-9-25	Y	WHEELING SOCIETY FOR CRIPPLED CHILDREN JAY E PRAGER PRESIDENT	TH EXPLORATION LLC	1/8+	960	33	N/A	N/A	N/A	N/A	N/A	N/A
10*22044	5-9-25	Y	MICHAEL A BISHOP	TH EXPLORATION LLC	1/8+	960	421	N/A	N/A	N/A	N/A	N/A	N/A
10*22296	5-9-25	Y	NOAH BAKER AND ALISA BAKER	TH EXPLORATION LLC	1/8+	962	200	N/A	N/A	N/A	N/A	N/A	N/A
10*22326	5-9-25	Y	RACHEL SONDA AND SCOTT SONDA	TH EXPLORATION LLC	1/8+	962	532	N/A	N/A	N/A	N/A	N/A	N/A
10*22407	5-9-25	Y	BRADLEY MURPHY	TH EXPLORATION LLC	1/8+	962	575	N/A	N/A	N/A	N/A	N/A	N/A
10*22430	5-9-25	Y	DEBORAH VANVRANKEN	TH EXPLORATION LLC	1/8+	964	510	N/A	N/A	N/A	N/A	N/A	N/A
10*22492	5-9-25	Y	FAITH MARIE FREESTONE AND ERIC FREESTONE	TH EXPLORATION LLC	1/8+	972	50	N/A	N/A	N/A	N/A	N/A	N/A
10*22547	5-9-25	Y	LAWRENCE EDWARD MURPHY AND JOAN MARIE MURPHY	TH EXPLORATION LLC	1/8+	966	628	N/A	N/A	N/A	N/A	N/A	N/A
10*22606	5-9-25	Y	ROBERT B MURPHY AND LINDA MURPHY	TH EXPLORATION LLC	1/8+	966	469	N/A	N/A	N/A	N/A	N/A	N/A
10*22636	5-9-25	Y	CHANDA WILSON AND DANIEL WILSON	TH EXPLORATION LLC	1/8+	968	226	N/A	N/A	N/A	N/A	N/A	N/A
10*23035	5-9-25	Y	DEAN S CARR	TH EXPLORATION LLC	1/8+	977	364	N/A	N/A	N/A	N/A	N/A	N/A
10*23508	5-9-25	Y	MICHAEL A MURPHY	TH EXPLORATION LLC	1/8+	1009	98	N/A	N/A	N/A	N/A	N/A	N/A
10*24888	5-9-25	Y	ARTHUR LEE MILLER ET AL	TH EXPLORATION LLC	1/8+	1027	187	N/A	N/A	N/A	N/A	N/A	N/A
10*24984	5-9-25	Y	JONATHAN BAKER	TH EXPLORATION LLC	1/8+	1027	558	N/A	N/A	N/A	N/A	N/A	N/A
10*25250	5-9-25	Y	LINDA KAY MYERS	TH EXPLORATION LLC	1/8+	1030	118	N/A	N/A	N/A	N/A	N/A	N/A

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10*25488	5-9-25	Y	SANDRA AKA KATHERINE S PARDINI	TH EXPLORATION LLC	1/8+	1031	544	N/A	N/A	N/A	N/A	N/A	N/A
Q090332002	5-9-25	Y	LORETTA JEAN RIGGLE ET VIR	NOBLE ENERGY INC	1/8+	860	538	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/172	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332003	5-9-25	Y	PATTY BERISFORD ET VIR	NOBLE ENERGY INC	1/8+	860	555	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q090332007	5-9-25	Y	ROBERT RANDOLPH WOODBURN ET UX	NOBLE ENERGY INC	1/8+	860	568	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 35/313	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-24	Z	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-24	Z	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-24	Z	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-24	Z	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-24	Z	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-24	Z	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-24	Z	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936061	5-9-24	Z	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-24	Z	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-24	Z	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-24	Z	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-24	Z	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-24	Z	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-39	AA	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-39	AA	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-39	AA	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX935969	5-9-39	AA	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-39	AA	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-39	AA	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX936061	5-9-39	AA	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-39	AA	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-39	AA	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-39	AA	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-39	AA	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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PENDING	5-9-33	BB	STONE HILL MINERALS HOLDINGS	TH EXPLORATION LLC	1/8+	1034 626	N/A	N/A	N/A	N/A	N/A	N/A
10*26046	5-9-41	CC	ARNOLD LLOYD C ET UX	CHEVRON USA INC	1/8+	915 628	N/A	N/A	N/A	N/A	N/A	Chevron USA Inc to TH Exploration LLC: 43/95
CVX939752	5-9-4	DD	LLOYD C ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	915 582	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.19	EE	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863 511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.19	EE	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861 595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.17	FF	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863 511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.17	FF	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861 595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.18	GG	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863 511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.18	GG	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861 595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.15	HH	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863 511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936591	5-9-4.15	HH	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936589	5-9-4.14	II	LLOYD C. ARNOLD AND JUDITH C ARNOLD	CHEVRON U.S.A., INC.	1/8+	863	511	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936591	5-9-4.14	II	CHARLES W. MILLER AND ESTHER JEAN MILLER	CHEVRON U.S.A., INC.	1/8+	861	595	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX868468	5-9-4.10	JJ	DEBORAH S. MIDCAP	TRIENERGY HOLDINGS, LLC	1/8+	737	260	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-35	KK	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-35	KK	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935969	5-9-35	KK	TIMOTHY HUFF ET UX	CHEVRON U.S.A., INC.	1/8+	864	47	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936053	5-9-35	KK	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-35	KK	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-35	KK	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936061	5-9-35	KK	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-35	KK	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-35	KK	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-35	KK	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866958	5-9-35	KK	ANITA L. SLOUGH ET AL	AB RESOURCES LLC	1/8+	696	7	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX866959	5-9-35	KK	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX868688	5-9-4.8	LL	THOMAS E. MIDCAP FRED A MIDCAP	TRIENERGY HOLDINGS, LLC	1/8+	738	482	N/A	N/A	TriEnergy Holdings LLC to NPAR LLC: 25/449	NPAR LLC to Chevron USA Inc: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/145	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935271	5-9-35.1	MM	CHARLES W. MILLER	CHEVRON U.S.A., INC.	1/8+	853	59	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935273	5-9-35.1	MM	PAUL PARSONS ET UX	CHEVRON U.S.A., INC.	1/8+	853	430	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX935276	5-9-35.1	MM	SHARON LYN RUSSELL	CHEVRON U.S.A., INC.	1/8+	853	422	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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CVX936053	5-9-35.1	MM	LLOYD C. ARNOLD ET UX	CHEVRON U.S.A., INC.	1/8+	864	39	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936054	5-9-35.1	MM	MARY JO CRONIN	CHEVRON U.S.A., INC.	1/8+	864	43	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936058	5-9-35.1	MM	RICHARD KURPIL ET UX	CHEVRON U.S.A., INC.	1/8+	863	594	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936061	5-9-35.1	MM	CLARA MAE CLIFTON	CHEVRON U.S.A., INC.	1/8+	853	426	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936062	5-9-35.1	MM	GEORGE EDWARDS ET UX	CHEVRON U.S.A., INC.	1/8+	853	418	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936112	5-9-35.1	MM	DONNA FAE KYLE	CHEVRON U.S.A., INC.	1/8+	853	449	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
CVX936113	5-9-35.1	MM	JUDITH MAY CONNER	CHEVRON U.S.A., INC.	1/8+	853	445	N/A	N/A	N/A	N/A	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
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CVX866959	5-9-35.1	MM	PAUL SCHEIBELHOOD ET AL	AB RESOURCES LLC	1/8+	695	629	AB Resources LLC to Chief Exploration & Development LLC & Radler 2000 LP: 24/484	Chief Exploration & Development LLC, Radler 2000, & Enerplus Resources Corp to Chevron USA Inc: 25/1 & 25/105	AB Resources LLC to NPAR LLC: 25/484	NPAR LLC to Chevron USA: 756/332	Chevron USA Inc to HG Energy II Appalachia LLC: 41/154	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286

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Q081124002	5-9-2	NN	JAMES REDMAN LEGG II ET AL	NOBLE ENERGY INC	1/8+	879	580	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q080154002	5-9-2.2	OO	KENNETH EUGENE WHITE AND LESLIE A WHITE	NOBLE ENERGY INC	1/8+	879	577	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
Q081123002	5-9-2.1	PP	JEFFREY L LEGG	NOBLE ENERGY INC	1/8+	879	575	N/A	N/A	Noble Energy Inc to CNX Gas Company LLC: 36/395	CNX Gas Company LLC to Noble Energy Inc: 37/169	Noble Energy Inc to HG Energy II Appalachia LLC: 39/1	Memorandum of Operating Agreement between TH Exploration LLC and HG Energy II Appalachia, LLC: 988/286
10*21546	5-8-7	QQ	EDWIN C MILLER AND KIMBERLY ANN MILLER	TH EXPLORATION LLC	1/8+	957	257	N/A	N/A	N/A	N/A	N/A	N/A

AFFIDAVIT

COPY

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

JURAT

Jen Pest
WARRHALL County 03:44:28 PM
Instrument No 1416299
Date Recorded 10/19/2016
Document Type HIS
Pages Recorded 1
Book-Page 29-62
Recording Fee \$5.00
Additional \$5.00

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

IN WITNESS WHEREOF, I hereunto set my hand and official seal.



My Commission Expires: 10-05-2020
Signature/Notary Public: Robin Bock
Name/Notary Public (Print): Robin Bock

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Office of Oil and Gas

SEP - 5 2019

WV Department of
Environmental Protection

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

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

RECTALS

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

1. DEFINITIONS

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

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

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

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

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

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

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

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15-0383

(b) All rights and interests in, under or derived from all unperfected interests in the property described in this Lease shall be assigned to the Assignee... (b) All rights and interests in, under or derived from all unperfected interests in the property described in this Lease shall be assigned to the Assignee...

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the date of recording... (b) All rights and interests in, under or derived from all unperfected interests in the property described in this Lease shall be assigned to the Assignee...

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the date of recording... (b) All rights and interests in, under or derived from all unperfected interests in the property described in this Lease shall be assigned to the Assignee...

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

ASSIGNMENT AND BILL OF SALE

Assignment Version
Recorded: 09/27/2016
Deed No: 147563
Municipality: Marshall County
Recorder Fee: \$77.00
County Fee: \$43.00

WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
REC'D SEP 11 2019
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TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignor or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

B. Any portion of the Leases set forth in the column entitled "Less and Except" on Exhibit A, 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia, and between Cornall Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and A. The Chevron ORRI previously conveyed to Assignor and as described in that certain

Assignment the following: Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor excepts and reserves from this Assignment the following: NOW, HEREBY, Assignor, 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. WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below, subject to certain overriding royalty interests and less and except certain captions. 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, less and except certain overriding royalty interests and exclusions; and

WITNESSETH:

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this day of February, 2019 (the "Effective Date"), by and between CHEVRON U.S.A. INC. (hereinafter "Assignor") and THE EXPLORATION, L.L.C. (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated the 1st day of February, 2019 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

ASSIGNMENT AND CONVEYANCE

STATE OF WEST VIRGINIA §
COUNTY OF MARSHALL §

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (hereinafter "Assignor") and THE EXPLORATION, LLC (hereinafter "Assignee") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated December 12, 2017 (the "Acreage Trade Agreement"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

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

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

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

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

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the

Marshall County
Jan Pest. Clerk
Instrument 1440860
05/25/2018 @ 02:36:09 PM
ASSIGNMENTS
Book 42 @ Page 109
Pages Recorded 9
Recording Cost \$ 15.00

WV-ADR-0009

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MEMORANDUM OF OPERATING AGREEMENT AND FINANCING STATEMENT

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

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

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

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

1. The Operator shall conduct and direct and have full control of all operations on the Contract Area as permitted and required by, and within the limits of, the Operating Agreement.

2. The liability of the parties under the Operating Agreement shall be several, not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for its proportional share of costs.

3. Each Non-Operator grants to Operator a lien upon its oil and gas rights, oil and gas leases and mineral interests in the Contract Area, and a security interest in its share of oil and/or gas when extracted and its interest in all fixtures, inventory, personal property and equipment located on or used on the Contract Area and in all its contract rights and receivables related thereto and arising herefrom to secure payment of its present and future share of costs and expenses, together with interest thereon at the rate provided in the Accounting Procedure referred to above. To the extent that Operator has a security interest under the Uniform Commercial Code ("Code") of the state or states in which the Contract Area is located, Operator without prejudice and in addition to all other legal, equitable and contractual remedies which are expressly reserved, shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the rights or security interests for the payment thereof.

4. The Operator grants to Non-Operator a lien and security interest equivalent to that granted to Operator as described in Paragraph 3 above, to secure payment by Operator of its own share of costs and expenses when due.



February 22, 2019

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

RE: Old Crow N-19HU

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Old Crow N-19HU well plat.

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

Sincerely,

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

Amy L. Miller
Permitting Specialist – Appalachia Region

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

Date of Notice Certification: 02/21/2019

API No. 47- 051

Operator's Well No. Old Crow N-20HU

Well Pad Name: Old Crow

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:	West Virginia	UTM NAD 83	Eastings:	820,289.44
County:	Marshall		Northing:	4,403,192.49
District:	Franklin	Public Road Access:	Rines Ridge Road (CR 76)	
Quadrangle:	Fowhatan Point 7.5'	Generally used farm name:	Donna Yoho	
Watershed:	Fish Creek (HUC 10)			

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

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

Required Attachments:

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

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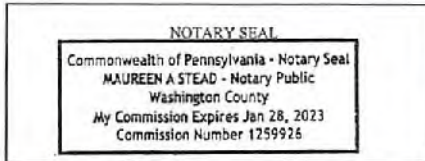
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Environmental Protection

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 21 day of FEB., 2019.
Maureen A Stead Notary Public
My Commission Expires 1/28/23

Oil and Gas Privacy Notice:

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

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

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

Date of Notice: 8/29/2019 **Date Permit Application Filed:** 9/3/2019

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: _____
Address: _____

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: _____
Address: _____

Name: _____
Address: _____

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

COAL OWNER OR LESSEE
Name: Consol Energy, Inc. Leatherwood, Inc. Attn: Casey Saunders
Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

COAL OPERATOR
Name: _____
Address: _____

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

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

*Please attach additional forms if necessary

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4705102270
API NO. 47-051
OPERATOR WELL NO. Old Crow N-19HJ
Well Pad Name: Old Crow

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

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

Time Limits and Methods for Filing Comments.

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

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

Comment Requirements

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

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

Permit Denial or Condition

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

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

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

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

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WW-6A
(8-13)

API NO. 47- 051 -
OPERATOR WELL NO. Old Crow N-19HU
Well Pad Name: Old Crow

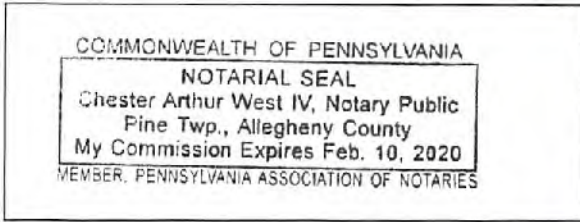
Notice is hereby given by:

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

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

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 29 day of Aug, 2019.
[Signature] Notary Public
My Commission Expires 2-10-2020

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WV Department of
Environmental Protection

WW-6AW
(1-12)

API NO. 47- 051
OPERATOR WELL NO. Old Crow N-19HU
Well Pad Name: Old Crow

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
VOLUNTARY STATEMENT OF NO OBJECTION

Instructions to Persons Named on Page WW-6A

The well operator named on page WW-6A is applying for a permit from the State of West Virginia to conduct oil or gas well work. Well work permits are valid for twenty-four (24) months. Please contact the listed well operator and the Office of Oil and Gas if you do not own any interest in the listed surface tract.

Comment and Waiver Provisions

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.

Pursuant to West Virginia Code § 22-6A-8(b) No permit may be issued less than thirty days after the filing date of the application for any well work except plugging or replugging; and no permit for plugging or replugging may be issued less than five days after the filing date of the application except a permit for plugging or replugging a dry hole: *Provided*, That if the applicant certifies that all persons entitled to notice of the application under the provisions of subsection (b), section ten of this article have been served in person or by certified mail, return receipt requested, with a copy of the well work application, including the erosion and sediment control plan, if required, and the well plat, and further files written statements of no objection by all such persons, the secretary may issue the well work permit at any time.

VOLUNTARY STATEMENT OF NO OBJECTION

I, Casey Saunders, 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 78, 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:

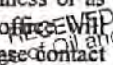
State: <u>West Virginia</u>	UTM NAD 83 Easting: <u>520,296.67</u>
County: <u>Marshall</u>	UTM NAD 83 Northing: <u>4,403,194.88</u>
District: <u>Franklin</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Donna Vivian Yoho (TOD) Gary Lance Yoho</u>
Watershed: <u>Tribulary of Fish Creek</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.

<p>*Please check the box that applies</p> <p><input type="checkbox"/> SURFACE OWNER</p> <p><input type="checkbox"/> SURFACE OWNER (Road and/or Other Disturbance)</p> <p><input type="checkbox"/> SURFACE OWNER (Impoundments/Pits)</p> <p><input checked="" type="checkbox"/> COAL OWNER OR LESSEE</p> <p><input type="checkbox"/> COAL OPERATOR</p> <p><input type="checkbox"/> WATER PURVEYOR</p> <p><input type="checkbox"/> OPERATOR OF ANY NATURAL GAS STORAGE FIELD</p>	<p>FOR EXECUTION BY A NATURAL PERSON</p> <p>Signature: _____</p> <p>Print Name: _____</p> <p>Date: _____</p> <p>FOR EXECUTION BY A CORPORATION, ETC.</p> <p>Company: <u>Consol Energy</u></p> <p>By: <u>Casey V. Saunders</u></p> <p>Its: <u>Manager Coal/Gas Coordination</u></p> <p>Signature: <u>Casey V. Saunders</u></p> <p>Date: <u>09/04/19</u></p>
--	--

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.


SEP - 5 2019
 WV Department of
 Environmental Protection

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: 11/16/2018 Date of Planned Entry: 11/17/2018

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: Donna Yoho
 Address: 3662 Rines Ridge Road
Proctor, WV 26055
 Name: _____
 Address: _____
 Name: _____
 Address: _____

COAL OWNER OR LESSEE
 Name: Consol Energy, Inc. Leatherwood, Inc. Attr. Casey Saucers
 Address: 1000 CONSOL Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(S)
 Name: _____
 Address: _____

*please attach additional forms if necessary

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.7784004; -80.7631553</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 76)</u>
District: <u>Franklin</u>	Watershed: <u>Tributary of Fish Creek (HUC 10)</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Donna Yoho</u>

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

Notice is hereby given by:

Well Operator: <u>Tug Hill Operating, LLC</u>	Address: <u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
Telephone: <u>724-749-8385</u>	<u>Canonsburg, PA 15317</u>
Email: <u>amiller@tug-hill.com</u>	Facsimile: <u>724-338-2030</u>

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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4:05102270

WW-6A5
(1/12)

Operator Well No. Old Crow N-16HU

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: 02/22/2019 Date Permit Application Filed: 02/22/2019

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

CERTIFIED MAIL
RETURN RECEIPT REQUESTED HAND
DELIVERY

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

Notice is hereby provided to the SURFACE OWNER(s)
(at the address listed in the records of the sheriff at the time of notice):

Name: Donna Yoho Name: _____
Address: 3862 Rines Ridge Road Address: _____
Proctor, WV 26055 _____

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: 520,295.26
County: Marshall Northing: 4,403,187.65
District: Franklin Public Road Access: Rines Ridge Road (County Route 76)
Quadrangle: Powhatan Point 7.5' Generally used farm name: Donna Yoho
Watershed: Tributary of 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 Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Telephone: 724-749-8388 Canonsburg, PA 15317
Email: amiller@tug-hilltop.com 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 denprivacvofficer@wv.gov.

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

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

March 2, 2018

Jill M. Newman
 Deputy Commissioner

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

Subject: DOH Permit for the Old Crow Pad, Marshall County
 Old Crow N-19HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2018-0130 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 76 SLS.

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

Very Truly Yours,

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

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

E.E.O./AFFIRMATIVE ACTION EMPLOYER

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

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

380 SOUTHPOINTE BLVD • SUITE 200 • CANONSBURG, PA 15317 • T 724.485-2000 • F 724.338.2030

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MISS UTILITY OF WEST VIRGINIA
 W.V. 21-10-0114
 1-800-245-4948
 1000 Bankers Building
 Charleston, West Virginia 25301

Call Before You Dig

811

MISS UTILITY OF WEST VIRGINIA
 1000 Bankers Building
 Charleston, West Virginia 25301
 1-800-245-4948
 W.V. 21-10-0114

Project Contacts

Project Manager: **John R. Smith**
 1000 Bankers Building
 Charleston, WV 25301
 304-763-3400

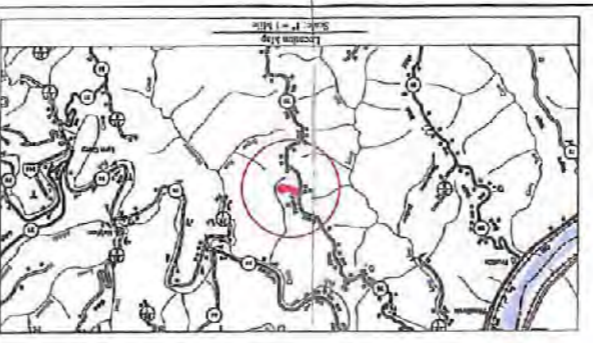
Site Engineer: **John R. Smith**
 1000 Bankers Building
 Charleston, WV 25301
 304-763-3400

Project Engineer: **John R. Smith**
 1000 Bankers Building
 Charleston, WV 25301
 304-763-3400

The WV Department of Transportation, Division of Highways, will issue an Environmental Permit (Form 8-12-109) for the construction of any construction activities to be performed on the project. The WV Department of Transportation, Division of Highways, will issue an Environmental Permit (Form 8-12-109) for the construction of any construction activities to be performed on the project.

The WV Department of Transportation, Division of Highways, will issue an Environmental Permit (Form 8-12-109) for the construction of any construction activities to be performed on the project.

The WV Department of Transportation, Division of Highways, will issue an Environmental Permit (Form 8-12-109) for the construction of any construction activities to be performed on the project.



Site Location (DAD 83)	Site Location (DAD 27)
Latitude (DAD 83)	Latitude (DAD 27)
Longitude (DAD 83)	Longitude (DAD 27)
Area (DAD 83)	Area (DAD 27)
Perimeter (DAD 83)	Perimeter (DAD 27)



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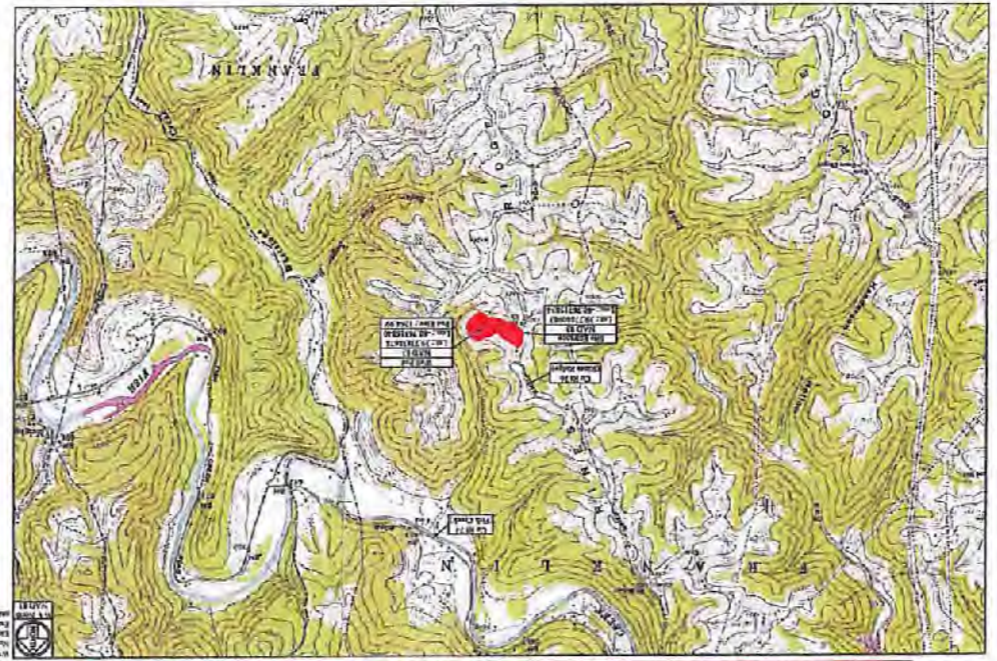
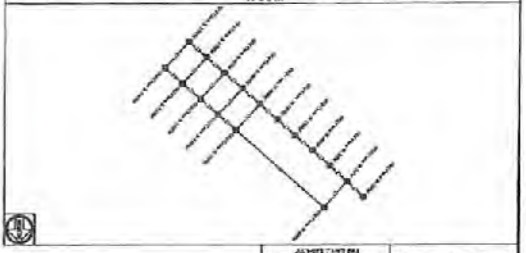


Exhibit A: Site As-Built

APR 15 2019	APR 15 2019	APR 15 2019	APR 15 2019
APR 15 2019	APR 15 2019	APR 15 2019	APR 15 2019
APR 15 2019	APR 15 2019	APR 15 2019	APR 15 2019
APR 15 2019	APR 15 2019	APR 15 2019	APR 15 2019
APR 15 2019	APR 15 2019	APR 15 2019	APR 15 2019



WV DEP 006
ACCEPTED AS-BUILT
 3/14/2019

Old Crow Well Site
 Erosion and Sediment Control Plans,
 Site Design, Construction Plan, &
 Tug Hill Operating
 Marshall County
 Franklin District
 Latitude 39.77838678°
 Longitude -80.76316840°
 Lower Fish Creek Watershed

Permit Site Information
 Franklin District, Marshall County, WV
 Emergency Number: 304-845-1920
 Old Crow Well Site
 Tug Hill Contact Number: 1-817-632-3400

PRINTERS' OR OTHER INFORMATION - Old Crow Well Site

Project Name	Project Number	Project Date
Old Crow Well Site	18-001	08/15/2018
Old Crow Well Site	18-001	08/15/2018

APR 15 2019

Project Name	Project Number	Project Date
Old Crow Well Site	18-001	08/15/2018
Old Crow Well Site	18-001	08/15/2018

APR 15 2019

Project Name	Project Number	Project Date
Old Crow Well Site	18-001	08/15/2018
Old Crow Well Site	18-001	08/15/2018

APR 15 2019

Project Name	Project Number	Project Date
Old Crow Well Site	18-001	08/15/2018
Old Crow Well Site	18-001	08/15/2018

EXISTING API NUMBERS

- 47-051-02023
- 47-051-02040
- 47-051-02042
- 47-051-02043
- 47-051-02122
- 47-051-02123

See 2/20/19

Cover Sheet

Old Crow Well Site
 Franklin District
 Marshall County, WV

Sheet	Description
1	Cover Sheet
2	Schedule of Quantities
3	Site Plan
4	Site Plan
5	Site Plan
6	Site Plan
7	Site Plan
8	Site Plan
9	Site Plan
10	Site Plan
11	Site Plan
12	Site Plan
13	Site Plan
14	Site Plan
15	Site Plan
16	Site Plan
17	Site Plan
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TUG HILL OPERATING

Kelly Services

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