



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

Wednesday, May 30, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit approval for TEN HIGH 1N-19HM
47-051-02017-00-00

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: TEN HIGH 1N-19HM
Farm Name: LAWRENCE & SHIRLEY CON.
U.S. WELL NUMBER: 47-051-02017-00-00
Horizontal 6A New Drill
Date Issued: 5/30/2018

PERMIT CONDITIONS

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

CONDITIONS

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

PERMIT CONDITIONS

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

Horizontal 6A Well Permit App. Checklist:

Received Date: _____

API: 47 051 0207

Operator: Tug Hill

WELL: Ten High W-19HM

Pad Name: _____

End Comment Period: _____

Pad Built: Yes No

Date Reviewed: AA INT. →

**CHECKLIST FOR FILING A PERMIT
Horizontal 6A Well**

Please include these required elements in the Horizontal Well 6A applications, in order listed below. Do not use staples.

First Well	Subsequent Well
10,150.00 <input type="checkbox"/>	5,150.00 <input type="checkbox"/>

Check#: _____

- Fees Paid
- Checklist / Cover letter
- WW-6B Notice of Application
- Cement Additives
- Well Bore Schematic (not required)
- WW-9 Fluids/Cuttings Disposal and Reclamation Plan
- Site Safety Plan
- Water Management Plan
- Topographic map showing access road
- Mylar Plat (Signed and sealed) (Surface Owner matches WW-6A)
- WW-6A1 Lease Information
- Road Crossing Letter (if drilling under road)
- WW-PN Application Notice by Publication
- Public Notice (dated copy of advertisement or affidavit of publication)
- WW-6AC Notice Certifications and Waivers
- WW-6A Notice of Application notarized w/ any attachments
- Topographic Map with labeled surrounding water wells (not required)
- Certified Mail receipts for WW-6A
- WW-6A3 Notice of Entry for Plat Survey (if one was conducted)

Field Approved

Field Approved

Field Approved

DWWM Approval

Plat Spotted

____ Area of review

____ Karst review

Horizontal 6A Well Permit App. Checklist:

API: _____

- Certified Mail receipts for WW-6A3
- WW-6A4 Notice of Intent to Drill (if no WW-6A3)
- Certified Mail receipts for WW-6A4
- WW-6A5 Notice of Planned Operation
- Certified Mail receipts for WW-6A5
- WW-6RW Well Location Restriction Waiver (if applicable)
- WW-6RW Voluntary Statement of No Objection (if applicable)
 - Waiver for Surface Owner at Wellhead
 - Waiver for Surface Owner for Roads or other Disturbances
 - Waiver for Coal Owner, Operator or Lessee
 - Waiver for surface owner for Impoundment or Pit
 - Waiver for Surface Owner or Water Purveyor within 1500 feet of Center of Pad
 - Waiver for Natural gas Storage Field Operator
- DOH Road Bonding Letter
- Frac Additives List of Chemical Names & CAS#s
- Site Construction, Reclamation, Erosion & Sediment Control Plans DEP Engineer Approved
- MSDS Sheets

Reviewer outside checks:

- Comments - Public, Surface Owner, Water Well Purveyor
- Bond (\$250,000)
- Operator is registered with the SOS
- Workers Compensation / Unemployment Insurance account is OK
- Professional Engineer/Company has COA
- Check for mine data at proposed coordinates
- Check for floodplain data at proposed coordinates

06/01/2018

- IMP-1A Associated Pit or Impoundment (if applicable)
- WW-6A7 Well Restrictions Form w/ Signature
 - At Least 100 Feet from Pad and LOD (including any ES Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland
 - DEP Waiver and Permit Conditions
 - At Least 300 Feet from Pad and LOD (including any ES Control Feature) to any Naturally Producing Trout Stream
 - DEP Waiver and Permit Conditions
 - At Least 1000 Feet from Pad and LOD (including any ES Control Feature) to any Groundwater Intake or Public Water Supply
 - DEP Waiver and Permit Conditions
 - At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
 - At Least 625 Feet from an Occupied Dwelling Structure to the Center of the Pad
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions
 - At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad
 - Surface Owner Waiver and Recorded with County Clerk, OR
 - DEP Variance and Permit Conditions

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

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Ten High 1N-19HM Well Pad Name: Ten High

3) Farm Name/Surface Owner: Lawrence & Shirley Conkle, ests Public Road Access: Shepherd Ridge Lane CR 21/9

4) Elevation, current ground: 1310' Elevation, proposed post-construction: 1310'

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

Other _____

(b) If Gas Shallow x Deep _____

Horizontal X

6) Existing Pad: Yes or No No

2/21/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6747' - 6798', thickness of 51' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,898'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 18,312'

11) Proposed Horizontal Leg Length: 10,384'

12) Approximate Fresh Water Strata Depths: 70', 1026' ✓

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: 2180' ✓

15) Approximate Coal Seam Depths: Sewickly Coal - 935' and Pittsburgh Coal - 1020'

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

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

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1020' TVD and 297' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	H40	48#	1,076'	1,076' ✓	1098ft^3(CTS)
Coal	13 3/8"	NEW	H40	48#	1,076'	1,076'	1098ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,804'	2,804' ✓	917ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	18,312'	18,312'	4677ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		7,044'	
Liners	N/A						

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TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE#24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE#24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8960		
Liners	N/A						

PACKERS

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

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. 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 16,645,000 lb proppant and 257,344 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.2

22) Area to be disturbed for well pad only, less access road (acres): 5.92

23) Describe centralizer placement for each casing string:

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

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

*See Attached

25) Proposed borehole conditioning procedures:

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

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*Note: Attach additional sheets as needed.

Area of Review

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

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

Data Sources Reviewed:

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

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) 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 - Ten High 1N-19HM

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
4705101934	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101944	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101945	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101943	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101954	Tug Hill Operating	6737' TVD planned	None	None	No, Permitted Marcellus well	Permitted Marcellus well. Not yet drilled
4705101973	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101974	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101975	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101976	Tug Hill Operating	6737' TVD planned	None	None	No, Permit submitted Marcellus well	Permit submitted Marcellus well. Not yet drilled
4705101950	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101951	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101955	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705101956	Tug Hill Operating	11878' TVD planned	None	None	No, Permit submitted Utica well	Permit submitted Utica well. Not yet drilled
4705100837	McElroy Coal Co.	Unknown	Unknown	Unknown	Unknown but unlikely, Appears to be an old shallow well, now plugged	Well records are incomplete. Well plugged 9/16/1998. A field survey was conducted to locate this well and no evidence of this well was found.

Select County: (051) Marshall

Enter Permit #: 00837

Get Data / Reset

Well: County = 51 Permit = 00837

Well Reassignment Information: Reassigned From
 OLD_COUNTY OLD_PERMIT NEW_COUNTY NEW_PERMIT
 51 70542 51 637

Location Information: View Map
 API COUNTY PERMIT TAX_DISTRICT QUAD_7E QUAD_7S QUAD_7E LAT_EB Lon_EB UTM_E UTM_N
 4705100837 Marshall 637 00000 08 0000 08 0000 43 5270 -83 57425 52764 44555 4

There is no Bottom Hole Location data for this well

Owner Information:
 API CMP_ID SUFFIX STATUS SURFACE_OWNER WELL_NUM CO_NUM LEASE LEASE_NUM MINERAL_OWN OPERATOR_OIL_COMPLETION PROP_VD PROP_IRD_FR FTA_EST_FR
 4705100837 0-18-1948 Plugging Connoco General Stone 64.3 (U.S.T.) Millroy Coal Company

Completion Information:
 API CMP_ID SPUC_ID ELEV DATUM FIELD DEPTH_FRT DEBERT FMT INTRAL_CLASS FINAL_CLASS TYPE RIG CMP_MTHD TVD TVD_NEW FTO D_BEF O_AFT D_BEF
 4705100837 0-18-1948 4351959 1087 Ground Level unclassified unclassified 18 64.3 (U.S.T.) unclassified unclassified

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

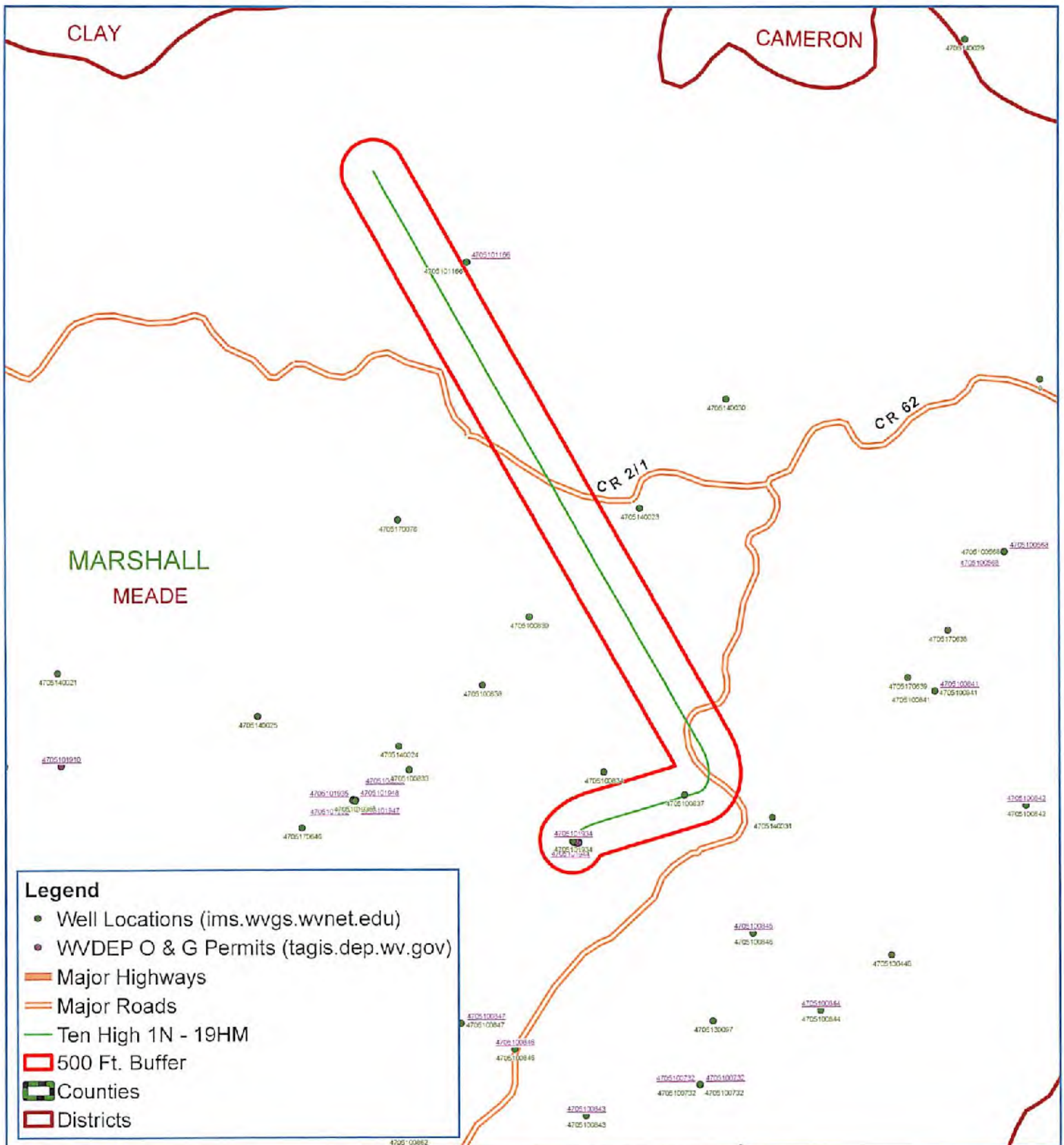
There is no Production Water data for this well

There is no Strategy data for this well

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

Plugging Information:
 API PLUG_ID DEPTH_FRT
 4705100837 0-18-1948 0

There is no Sample data for this well

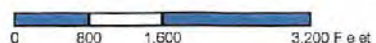


Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Ten High 1N - 19HM
- 500 Ft. Buffer
- Counties
- Districts



Ten High 1N-19HM Meade District Marshall County, WV



Map Created: February 15, 2018
Map Current As Of: February 15, 2018

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

Map Prepared by:



on 2/21/18

Tug Hill Operating, LLC Casing and Cement Program

Ten High 1N-19HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	H40	17 1/2"	1,076'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,802'	CTS
Production	5 1/2"	P110	8 7/8 x 8 3/4"	18,312'	CTS

Cement

- Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
- Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
- Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
- Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
- Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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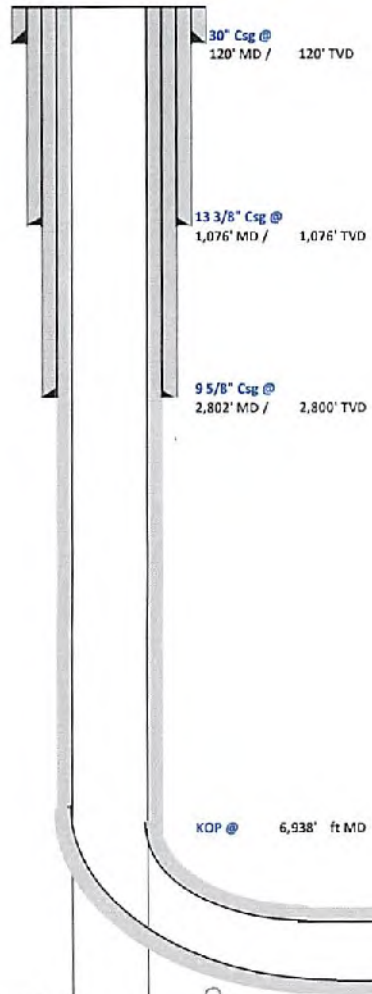


WELL NAME: Ten High 1N-19HM
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 1,310' GL Elev: 1,310'
 TD:
 TH Latitude: 39.80682433
 TH Longitude: -80.68109681
 BH Latitude: 39.83559899
 BH Longitude: -80.69201899

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1026
Sewickley Coal	935
Pittsburgh Coal	1020
Big Lime	2135
Wellb	2511
Berea	2698
Gordon	2974
Rhinastreet	6088
Genesey/Burkett	6607
Tully	6636
Hamilton	6668
Marcellus	6747
Landing Depth	6787
Onondaga	6798
Pilot Hole Depth	6898

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,076'	1,076'	48	H40	Surface
Intermediate 1	12 1/4	9 5/8	2,802'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	18,312'	6,605'	20	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,109	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	898	A	15	Air	1 Centralizer every other jt
Production	4,128	A	14.5	Air / SOBDM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



KOP @ 6,938' ft MD

JW
2/21/18

Pilot Hole
 PH TD @ 6,898' TVD
 Landing Point @ 7,928' MD / 6,787' TVD
 PH TVD = 100' below Onondaga Top

Lateral TD @ 18,312' ft MD
 6,605' ft TVD

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TUG HILL
OPERATING

Well: Ten High 1N-19HM (R)
Site: Ten High
Project: Marshall County, West Virginia
Design: rev2

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 1 1/100' build
3	1900.00	4.00	0.00	1639.68	13.95	0.00	1.00	0.00	13.38	Begin 1 1/100' turn
4	2173.42	4.00	40.00	2172.48	30.80	6.13	1.00	109.96	27.79	Begin 4.00' tangent
5	3103.20	4.00	40.00	3100.00	80.49	47.82	0.00	0.00	63.57	Begin 3 1/100' build/turn
6	3639.04	20.00	50.00	3622.48	154.19	136.57	3.00	12.39	110.71	Begin 3 1/100' build/turn
7	4349.56	38.33	73.57	4242.16	296.28	438.52	3.00	43.91	159.38	Begin 38.33' tangent
8	6037.73	38.33	73.57	6272.56	750.33	1077.97	0.00	0.00	157.11	Begin 10 1/100' build/turn
9	7927.65	91.00	330.28	6787.00	1450.41	2044.42	10.00	-99.88	809.41	Begin 91.00' lateral section
10	18311.87	91.00	330.28	6605.00	10466.98	-3103.45	0.00	0.00	0917.37	PBHL/TD 18311.87 MD/6605.00 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: GL @ 1310.00usft

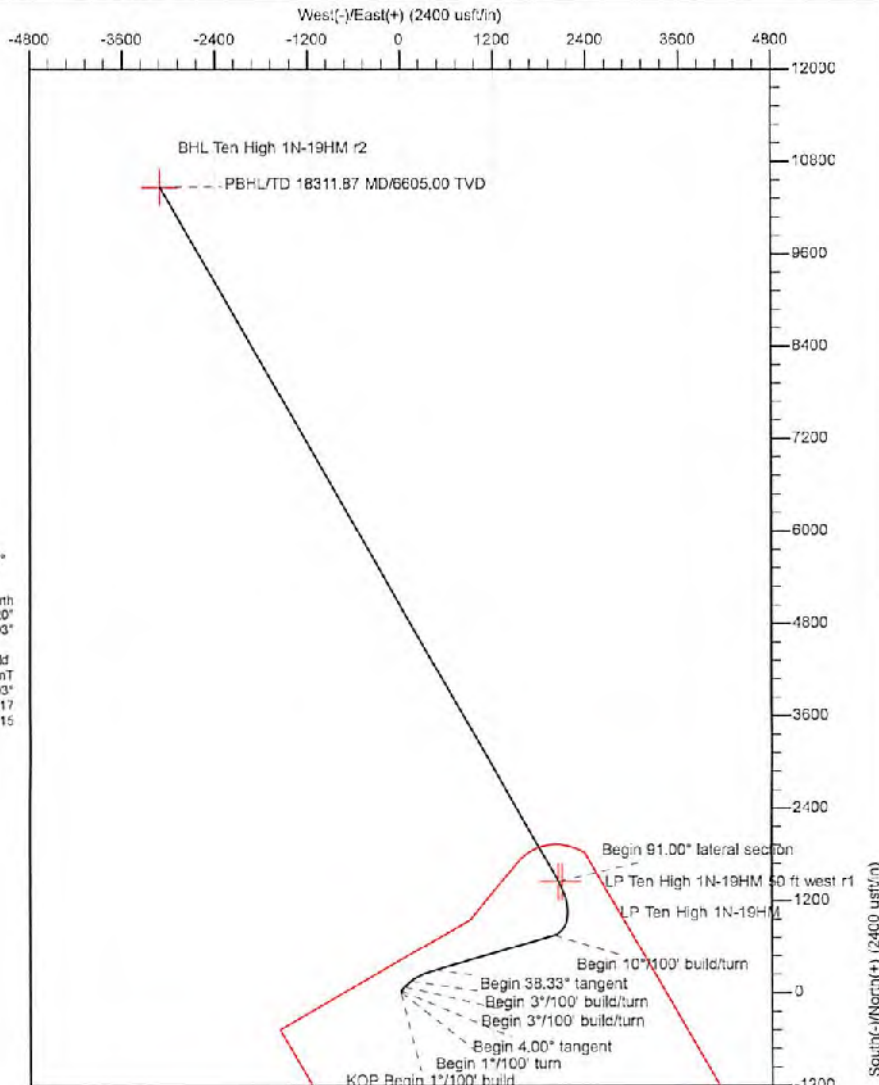
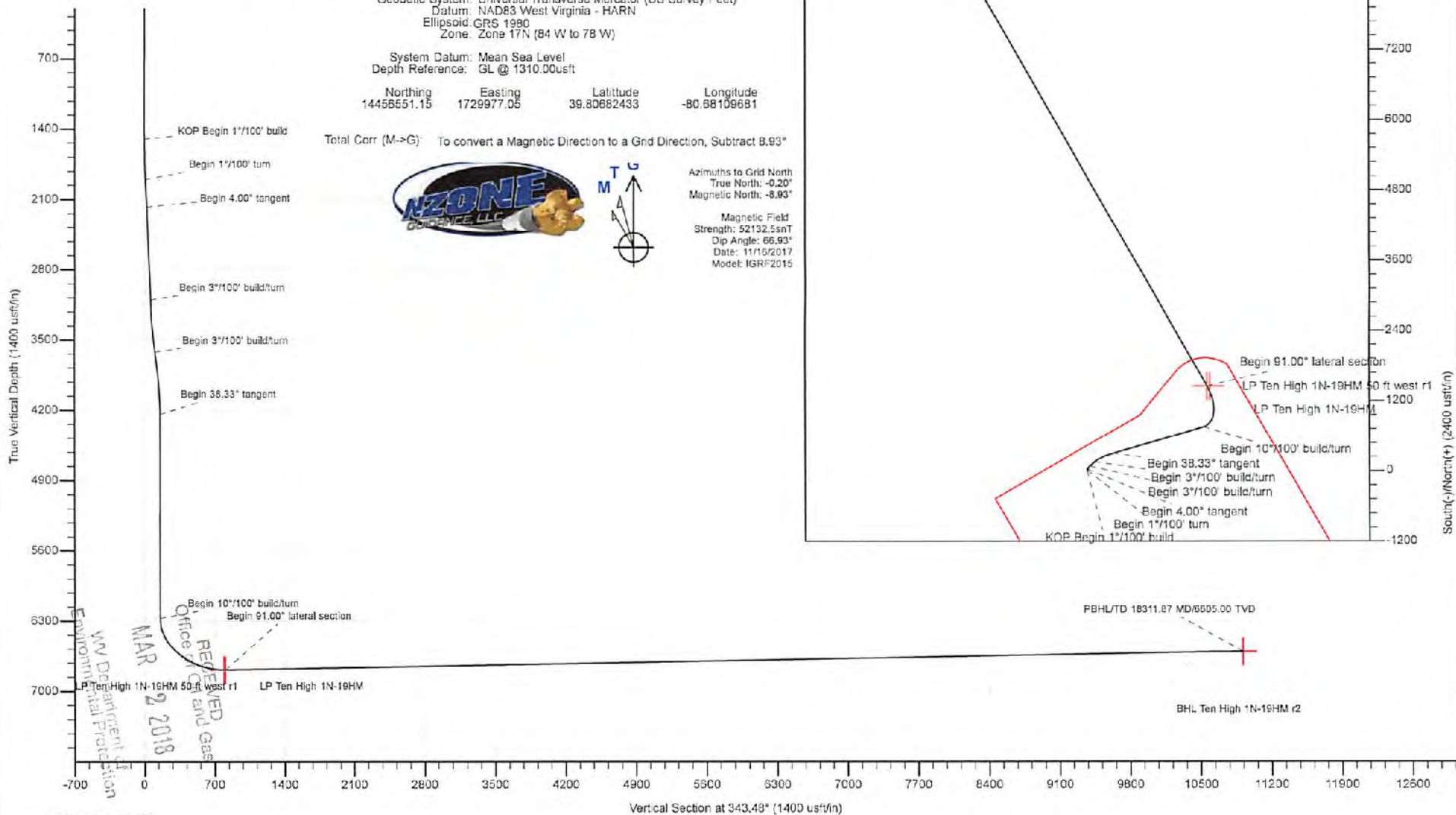
Northing: 14456551.15 Easting: 1729977.05 Latitude: 39.80682433 Longitude: -80.68109681

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.93°



Azimuths to Grid North
True North: -0.20°
Magnetic North: -8.93°

Magnetic Field
Strength: 52132.5nT
Dip Angle: 66.93°
Date: 11/15/2017
Model: IGRF2015



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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-19HM (R)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Ten High				
Site Position:		Northing:	14,456,545.60 usft	Latitude:	39.80680885
From:	Lat/Long	Easting:	1,730,001.41 usft	Longitude:	-80.68101011
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.20 °

Well	Ten High 1N-19HM (R)					
Well Position	+N/-S	0.00 usft	Northing:	14,456,551.15 usft	Latitude:	39.80682433
	+E/-W	0.00 usft	Easting:	1,729,977.05 usft	Longitude:	-80.68109681
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	1,310.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/16/2017	-0.72	66.93	52,132.47242308

Design	rev2				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	343.48	

Plan Survey Tool Program	Date	2/14/2018			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	18,311.88 rev2 (Original Hole)	MWD		
			MWD - Standard		

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Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	4.00	0.00	1,899.68	13.96	0.00	1.00	1.00	0.00	0.00	
2,173.42	4.00	40.00	2,172.48	30.80	6.13	1.00	0.00	14.63	109.96	
3,103.20	4.00	40.00	3,100.00	80.48	47.82	0.00	0.00	0.00	0.00	
3,639.04	20.00	50.00	3,622.46	154.19	130.57	3.00	2.99	1.87	12.39	
4,349.58	38.33	73.57	4,242.16	296.26	438.52	3.00	2.58	3.32	43.01	
6,937.74	38.33	73.57	6,272.56	750.33	1,977.97	0.00	0.00	0.00	0.00	
7,927.65	91.00	330.28	6,787.00	1,450.41	2,044.42	10.00	5.32	-10.43	-99.88	LP Ten High 1N-19HM
18,311.88	91.00	330.28	6,605.00	10,466.98	-3,103.45	0.00	0.00	0.00	0.00	BHL Ten High 1N-19HM

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Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
100.00	0.00	0.00	100.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
200.00	0.00	0.00	200.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
300.00	0.00	0.00	300.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
400.00	0.00	0.00	400.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
500.00	0.00	0.00	500.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
600.00	0.00	0.00	600.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
700.00	0.00	0.00	700.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
800.00	0.00	0.00	800.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
900.00	0.00	0.00	900.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,456,551.15	1,729,977.05	39.80682433	-80.68109681
KOP Begin 1°/100' build									
1,600.00	1.00	0.00	1,599.99	0.87	0.00	14,456,552.02	1,729,977.05	39.80682673	-80.68109680
1,700.00	2.00	0.00	1,699.96	3.49	0.00	14,456,554.64	1,729,977.05	39.80683392	-80.68109677
1,800.00	3.00	0.00	1,799.86	7.85	0.00	14,456,559.00	1,729,977.05	39.80684580	-80.68109671
1,900.00	4.00	0.00	1,899.68	13.96	0.00	14,456,565.11	1,729,977.05	39.80686266	-80.68109663
Begin 1°/100' turn									
2,000.00	3.78	14.42	1,999.45	20.64	0.82	14,456,571.79	1,729,977.87	39.80688099	-80.68109363
2,100.00	3.81	29.56	2,099.23	26.72	3.28	14,456,577.87	1,729,980.33	39.80689767	-80.68108479
2,173.42	4.00	40.00	2,172.48	30.80	6.13	14,456,581.95	1,729,983.18	39.80690886	-80.68107459
Begin 4.00° tangent									
2,200.00	4.00	40.00	2,199.00	32.22	7.32	14,456,583.37	1,729,984.37	39.80691275	-80.68107033
2,300.00	4.00	40.00	2,298.75	37.57	11.81	14,456,588.72	1,729,988.85	39.80692738	-80.68105429
2,400.00	4.00	40.00	2,398.51	42.91	16.29	14,456,594.06	1,729,993.34	39.80694201	-80.68103828
2,500.00	4.00	40.00	2,498.27	48.25	20.77	14,456,599.41	1,729,997.82	39.80695664	-80.68102223
2,600.00	4.00	40.00	2,598.02	53.60	25.26	14,456,604.75	1,730,002.30	39.80697127	-80.68100619
2,700.00	4.00	40.00	2,697.78	58.94	29.74	14,456,610.09	1,730,006.79	39.80698591	-80.68099016
2,800.00	4.00	40.00	2,797.53	64.28	34.23	14,456,615.44	1,730,011.27	39.80700054	-80.68097413
2,900.00	4.00	40.00	2,897.29	69.63	38.71	14,456,620.78	1,730,015.76	39.80701517	-80.68095809
3,000.00	4.00	40.00	2,997.05	74.97	43.19	14,456,626.12	1,730,020.24	39.80702980	-80.68094206
3,100.00	4.00	40.00	3,096.80	80.32	47.68	14,456,631.47	1,730,024.72	39.80704443	-80.68092602
3,103.20	4.00	40.00	3,100.00	80.49	47.82	14,456,631.64	1,730,024.87	39.80704490	-80.68092551
Begin 3°/100' build/turn									
3,200.00	6.86	45.22	3,196.35	87.15	54.10	14,456,638.30	1,730,031.14	39.80706313	-80.68090307
3,300.00	9.85	47.41	3,295.28	97.15	64.64	14,456,648.30	1,730,041.68	39.80709049	-80.68086542
3,400.00	12.84	46.59	3,393.31	110.29	79.27	14,456,661.44	1,730,056.32	39.80712643	-80.68081315
3,500.00	15.83	49.33	3,490.19	128.53	97.96	14,456,677.68	1,730,075.00	39.80717086	-80.68074641
3,600.00	18.83	49.84	3,585.64	145.83	120.64	14,456,696.96	1,730,097.69	39.80722364	-80.68068538
3,639.04	20.00	50.00	3,622.48	154.19	130.57	14,456,705.34	1,730,107.62	39.80724649	-80.68062992
Begin 3°/100' build/turn									
3,700.00	21.37	53.42	3,679.49	167.51	147.48	14,456,718.66	1,730,124.53	39.80728291	-80.68056955
3,800.00	23.75	58.20	3,771.84	188.98	179.23	14,456,740.14	1,730,156.28	39.80734157	-80.68045620
3,900.00	26.25	62.13	3,862.47	209.94	215.91	14,456,761.09	1,730,192.95	39.80739877	-80.68032536
4,000.00	28.84	65.41	3,951.13	230.32	257.40	14,456,781.48	1,730,234.44	39.80745434	-80.68017737
4,100.00	31.50	68.18	4,037.58	250.07	303.59	14,456,801.23	1,730,280.63	39.80750812	-80.68001264
4,200.00	34.20	70.57	4,121.58	269.14	354.36	14,456,820.29	1,730,331.40	39.80755988	-80.67983162
4,300.00	36.95	72.64	4,202.91	287.47	409.56	14,456,838.62	1,730,386.61	39.80760977	-80.67963481
4,349.56	38.33	73.57	4,242.18	296.26	438.52	14,456,847.41	1,730,415.57	39.80763363	-80.67953159

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Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,349.57	38.33	73.57	4,242.16	296.26	438.53	14,456,847.41	1,730,415.57	39.80763364	-80.67953157	
Begin 38.33° tangent										
4,400.00	38.33	73.57	4,281.73	305.11	468.52	14,456,856.26	1,730,445.57	39.80765764	-80.67942465	
4,500.00	38.33	73.57	4,360.18	322.65	528.00	14,456,873.81	1,730,505.05	39.80770523	-80.67921263	
4,600.00	38.33	73.57	4,438.62	340.20	587.48	14,456,891.35	1,730,564.53	39.80775283	-80.67900061	
4,700.00	38.33	73.57	4,517.07	357.74	646.96	14,456,908.89	1,730,624.01	39.80780042	-80.67878859	
4,800.00	38.33	73.57	4,595.52	375.29	706.44	14,456,926.44	1,730,683.49	39.80784802	-80.67857657	
4,900.00	38.33	73.57	4,673.97	392.83	765.92	14,456,943.98	1,730,742.97	39.80789561	-80.67836455	
5,000.00	38.33	73.57	4,752.42	410.37	825.40	14,456,961.53	1,730,802.45	39.80794320	-80.67815253	
5,100.00	38.33	73.57	4,830.87	427.92	884.88	14,456,979.07	1,730,861.93	39.80799080	-80.67794051	
5,200.00	38.33	73.57	4,909.32	445.46	944.36	14,456,996.61	1,730,921.41	39.80803839	-80.67772849	
5,300.00	38.33	73.57	4,987.77	463.01	1,003.85	14,457,014.16	1,730,980.89	39.80808598	-80.67751647	
5,400.00	38.33	73.57	5,066.22	480.55	1,063.33	14,457,031.70	1,731,040.37	39.80813357	-80.67730445	
5,500.00	38.33	73.57	5,144.67	498.09	1,122.81	14,457,049.25	1,731,099.85	39.80818116	-80.67709243	
5,600.00	38.33	73.57	5,223.12	515.64	1,182.29	14,457,066.79	1,731,159.33	39.80822875	-80.67688041	
5,700.00	38.33	73.57	5,301.57	533.18	1,241.77	14,457,084.34	1,731,218.81	39.80827634	-80.67666838	
5,800.00	38.33	73.57	5,380.02	550.73	1,301.25	14,457,101.88	1,731,278.29	39.80832393	-80.67645636	
5,900.00	38.33	73.57	5,458.47	568.27	1,360.73	14,457,119.42	1,731,337.77	39.80837152	-80.67624434	
6,000.00	38.33	73.57	5,536.92	585.82	1,420.21	14,457,136.97	1,731,397.25	39.80841911	-80.67603232	
6,100.00	38.33	73.57	5,615.37	603.36	1,479.69	14,457,154.51	1,731,456.73	39.80846670	-80.67582029	
6,200.00	38.33	73.57	5,693.81	620.90	1,539.17	14,457,172.06	1,731,516.21	39.80851429	-80.67560827	
6,300.00	38.33	73.57	5,772.26	638.45	1,598.65	14,457,189.60	1,731,575.69	39.80856188	-80.67539625	
6,400.00	38.33	73.57	5,850.71	655.99	1,658.13	14,457,207.14	1,731,635.17	39.80860947	-80.67518422	
6,500.00	38.33	73.57	5,929.16	673.54	1,717.61	14,457,224.69	1,731,694.65	39.80865705	-80.67497220	
6,600.00	38.33	73.57	6,007.61	691.08	1,777.09	14,457,242.23	1,731,754.13	39.80870464	-80.67476017	
6,700.00	38.33	73.57	6,086.06	708.62	1,836.57	14,457,259.78	1,731,813.61	39.80875223	-80.67454815	
6,800.00	38.33	73.57	6,164.51	726.17	1,896.05	14,457,277.32	1,731,873.10	39.80879981	-80.67433612	
6,900.00	38.33	73.57	6,242.96	743.71	1,955.53	14,457,294.86	1,731,932.58	39.80884740	-80.67412410	
6,937.73	38.33	73.57	6,272.56	750.33	1,977.97	14,457,301.48	1,731,955.02	39.80886535	-80.67404410	
Begin 10°/100' build/tum										
7,000.00	37.88	63.50	6,321.67	764.30	2,013.56	14,457,315.45	1,731,990.60	39.80890336	-80.67391720	
7,100.00	38.47	47.30	6,400.59	799.12	2,063.90	14,457,350.27	1,732,040.94	39.80898848	-80.67373750	
7,200.00	41.34	32.34	6,477.47	848.24	2,104.53	14,457,399.40	1,732,081.57	39.80913298	-80.67359219	
7,300.00	45.92	19.42	6,549.98	910.18	2,134.21	14,457,461.33	1,732,111.26	39.80930278	-80.67348589	
7,400.00	51.72	8.57	6,615.91	983.05	2,152.05	14,457,534.20	1,732,129.09	39.80950271	-80.67342122	
7,500.00	58.36	359.44	6,673.26	1,064.63	2,157.50	14,457,615.79	1,732,134.54	39.80972670	-80.67340076	
7,600.00	65.57	351.57	6,720.29	1,152.46	2,150.39	14,457,703.61	1,732,127.44	39.80996796	-80.67342491	
7,700.00	73.14	344.58	6,755.56	1,243.85	2,130.95	14,457,795.00	1,732,108.00	39.81021913	-80.67349296	
7,800.00	80.92	338.13	6,778.01	1,336.03	2,099.76	14,457,887.18	1,732,076.81	39.81047260	-80.67360283	
7,900.00	88.82	331.97	6,786.96	1,426.20	2,057.77	14,457,977.36	1,732,034.82	39.81072066	-80.67375118	
7,927.65	91.00	330.28	6,787.00	1,450.41	2,044.42	14,458,001.57	1,732,021.46	39.81078728	-80.67379641	
Begin 91.00° lateral section										
8,000.00	91.00	330.28	6,785.73	1,513.24	2,008.55	14,458,064.39	1,731,985.60	39.81096016	-80.67392531	
8,100.00	91.00	330.28	6,783.98	1,600.06	1,958.98	14,458,151.22	1,731,936.02	39.81119911	-80.67410072	
8,200.00	91.00	330.28	6,782.23	1,686.88	1,909.40	14,458,238.05	1,731,886.45	39.81143806	-80.67427612	
8,300.00	91.00	330.28	6,780.47	1,773.72	1,859.83	14,458,324.88	1,731,836.88	39.81167701	-80.67445152	
8,400.00	91.00	330.28	6,778.72	1,860.55	1,810.26	14,458,411.71	1,731,787.30	39.81191596	-80.67462693	
8,500.00	91.00	330.28	6,776.97	1,947.38	1,760.68	14,458,498.53	1,731,737.73	39.81215491	-80.67480234	
8,600.00	91.00	330.28	6,775.22	2,034.21	1,711.11	14,458,585.36	1,731,688.15	39.81239386	-80.67497775	
8,700.00	91.00	330.28	6,773.46	2,121.04	1,661.53	14,458,672.19	1,731,638.58	39.81263281	-80.67515316	
8,800.00	91.00	330.28	6,771.71	2,207.87	1,611.96	14,458,759.02	1,731,589.01	39.81287176	-80.67532857	
8,900.00	91.00	330.28	6,769.96	2,294.70	1,562.39	14,458,845.85	1,731,539.43	39.81311071	-80.67550399	
9,000.00	91.00	330.28	6,768.21	2,381.53	1,512.81	14,458,932.68	1,731,489.86	39.81334965	-80.67567939	
9,100.00	91.00	330.28	6,766.45	2,468.36	1,463.24	14,459,019.51	1,731,440.28	39.81358860	-80.67585481	

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06/01/2018

WVA Department of
Environmental Protection



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-19HM (R)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,200.00	91.00	330.28	6,764.70	2,555.19	1,413.66	14,459,106.34	1,731,390.71	39.81382755	-80.67803023	
9,300.00	91.00	330.28	6,762.95	2,642.02	1,364.09	14,459,193.17	1,731,341.14	39.81408650	-80.67620564	
9,400.00	91.00	330.28	6,761.19	2,728.85	1,314.52	14,459,280.00	1,731,291.56	39.81430544	-80.67638108	
9,500.00	91.00	330.28	6,759.44	2,815.68	1,264.94	14,459,366.83	1,731,241.99	39.81454439	-80.67655648	
9,600.00	91.00	330.28	6,757.69	2,902.51	1,215.37	14,459,453.66	1,731,192.42	39.81478334	-80.67673190	
9,700.00	91.00	330.28	6,755.94	2,989.34	1,165.79	14,459,540.49	1,731,142.84	39.81502228	-80.67690732	
9,800.00	91.00	330.28	6,754.18	3,076.17	1,116.22	14,459,627.32	1,731,093.27	39.81526123	-80.67708275	
9,900.00	91.00	330.28	6,752.43	3,163.00	1,066.65	14,459,714.15	1,731,043.69	39.81550017	-80.67725817	
10,000.00	91.00	330.28	6,750.68	3,249.82	1,017.07	14,459,800.98	1,730,994.12	39.81573912	-80.67743360	
10,100.00	91.00	330.28	6,748.93	3,336.65	967.50	14,459,887.81	1,730,944.55	39.81597806	-80.67760902	
10,200.00	91.00	330.28	6,747.17	3,423.48	917.93	14,459,974.64	1,730,894.97	39.81621701	-80.67778445	
10,300.00	91.00	330.28	6,745.42	3,510.31	868.35	14,460,061.46	1,730,845.40	39.81645595	-80.67795988	
10,400.00	91.00	330.28	6,743.67	3,597.14	818.78	14,460,148.29	1,730,795.82	39.81669490	-80.67813531	
10,500.00	91.00	330.28	6,741.92	3,683.97	769.20	14,460,235.12	1,730,746.25	39.81693384	-80.67831074	
10,600.00	91.00	330.28	6,740.16	3,770.80	719.63	14,460,321.95	1,730,696.68	39.81717278	-80.67848618	
10,700.00	91.00	330.28	6,738.41	3,857.63	670.06	14,460,408.78	1,730,647.10	39.81741173	-80.67866161	
10,800.00	91.00	330.28	6,736.66	3,944.46	620.48	14,460,495.61	1,730,597.53	39.81765067	-80.67883705	
10,900.00	91.00	330.28	6,734.90	4,031.29	570.91	14,460,582.44	1,730,547.95	39.81788961	-80.67901248	
11,000.00	91.00	330.28	6,733.15	4,118.12	521.33	14,460,669.27	1,730,498.38	39.81812856	-80.67918792	
11,100.00	91.00	330.28	6,731.40	4,204.95	471.76	14,460,756.10	1,730,448.81	39.81836750	-80.67936336	
11,200.00	91.00	330.28	6,729.65	4,291.78	422.19	14,460,842.93	1,730,399.23	39.81860644	-80.67953880	
11,300.00	91.00	330.28	6,727.89	4,378.61	372.61	14,460,929.76	1,730,349.66	39.81884538	-80.67971424	
11,400.00	91.00	330.28	6,726.14	4,465.44	323.04	14,461,016.59	1,730,300.08	39.81908432	-80.67988968	
11,500.00	91.00	330.28	6,724.39	4,552.27	273.46	14,461,103.42	1,730,250.51	39.81932326	-80.68006513	
11,600.00	91.00	330.28	6,722.64	4,639.10	223.89	14,461,190.25	1,730,200.94	39.81956221	-80.68024057	
11,700.00	91.00	330.28	6,720.88	4,725.93	174.32	14,461,277.08	1,730,151.36	39.81980115	-80.68041602	
11,800.00	91.00	330.28	6,719.13	4,812.75	124.74	14,461,363.91	1,730,101.79	39.82004009	-80.68059147	
11,900.00	91.00	330.28	6,717.38	4,899.58	75.17	14,461,450.74	1,730,052.22	39.82027903	-80.68076692	
12,000.00	91.00	330.28	6,715.63	4,986.41	25.60	14,461,537.57	1,730,002.64	39.82051797	-80.68094237	
12,100.00	91.00	330.28	6,713.87	5,073.24	-23.98	14,461,624.40	1,729,953.07	39.82075691	-80.68111782	
12,200.00	91.00	330.28	6,712.12	5,160.07	-73.55	14,461,711.22	1,729,903.49	39.82099585	-80.68129327	
12,300.00	91.00	330.28	6,710.37	5,246.90	-123.13	14,461,798.05	1,729,853.92	39.82123478	-80.68146872	
12,400.00	91.00	330.28	6,708.62	5,333.73	-172.70	14,461,884.88	1,729,804.35	39.82147372	-80.68164418	
12,500.00	91.00	330.28	6,706.86	5,420.56	-222.27	14,461,971.71	1,729,754.77	39.82171266	-80.68181963	
12,600.00	91.00	330.28	6,705.11	5,507.39	-271.85	14,462,058.54	1,729,705.20	39.82195160	-80.68199508	
12,700.00	91.00	330.28	6,703.36	5,594.22	-321.42	14,462,145.37	1,729,655.62	39.82219054	-80.68217055	
12,800.00	91.00	330.28	6,701.60	5,681.05	-371.00	14,462,232.20	1,729,606.05	39.82242948	-80.68234601	
12,900.00	91.00	330.28	6,699.85	5,767.88	-420.57	14,462,319.03	1,729,556.48	39.82266841	-80.68252147	
13,000.00	91.00	330.28	6,698.10	5,854.71	-470.14	14,462,405.86	1,729,506.90	39.82290735	-80.68269693	
13,100.00	91.00	330.28	6,696.35	5,941.54	-519.72	14,462,492.69	1,729,457.33	39.82314629	-80.68287240	
13,200.00	91.00	330.28	6,694.59	6,028.37	-569.29	14,462,579.52	1,729,407.75	39.82338522	-80.68304786	
13,300.00	91.00	330.28	6,692.84	6,115.20	-618.87	14,462,666.35	1,729,358.18	39.82362416	-80.68322333	
13,400.00	91.00	330.28	6,691.09	6,202.03	-668.44	14,462,753.18	1,729,308.61	39.82386310	-80.68339879	
13,500.00	91.00	330.28	6,689.34	6,288.86	-718.01	14,462,840.01	1,729,259.03	39.82410203	-80.68357426	
13,600.00	91.00	330.28	6,687.58	6,375.69	-767.59	14,462,926.84	1,729,209.46	39.82434097	-80.68374973	
13,700.00	91.00	330.28	6,685.83	6,462.51	-817.16	14,463,013.67	1,729,159.88	39.82457990	-80.68392520	
13,800.00	91.00	330.28	6,684.08	6,549.34	-866.74	14,463,100.50	1,729,110.31	39.82481884	-80.68410067	
13,900.00	91.00	330.28	6,682.33	6,636.17	-916.31	14,463,187.33	1,729,060.74	39.82505777	-80.68427615	
14,000.00	91.00	330.28	6,680.57	6,723.00	-965.88	14,463,274.16	1,729,011.16	39.82529671	-80.68445162	
14,100.00	91.00	330.28	6,678.82	6,809.83	-1,015.46	14,463,360.98	1,728,961.59	39.82553564	-80.68462710	
14,200.00	91.00	330.28	6,677.07	6,896.66	-1,065.03	14,463,447.81	1,728,912.02	39.82577457	-80.68480257	
14,300.00	91.00	330.28	6,675.31	6,983.49	-1,114.60	14,463,534.64	1,728,862.44	39.82601351	-80.68497805	
14,400.00	91.00	330.28	6,673.56	7,070.32	-1,164.18	14,463,621.47	1,728,812.87	39.82625244	-80.68515353	
14,500.00	91.00	330.28	6,671.81	7,157.15	-1,213.75	14,463,708.30	1,728,763.29	39.82649137	-80.68532901	
14,600.00	91.00	330.28	6,670.06	7,243.98	-1,263.33	14,463,795.13	1,728,713.72	39.82673031	-80.68550449	



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-19HM (R)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,700.00	91.00	330.28	6,668.30	7,330.81	-1,312.90	14,463,881.96	1,728,664.15	39.82696924	-80.68567997
14,800.00	91.00	330.28	6,666.55	7,417.64	-1,362.47	14,463,988.79	1,728,614.57	39.82720817	-80.68565546
14,900.00	91.00	330.28	6,664.80	7,504.47	-1,412.05	14,464,055.62	1,728,565.00	39.82744710	-80.68603094
15,000.00	91.00	330.28	6,663.05	7,591.30	-1,461.62	14,464,142.45	1,728,515.42	39.82788604	-80.68620643
15,100.00	91.00	330.28	6,661.29	7,678.13	-1,511.20	14,464,229.28	1,728,465.85	39.82792497	-80.68638192
15,200.00	91.00	330.28	6,659.54	7,764.96	-1,560.77	14,464,316.11	1,728,416.28	39.82816390	-80.68655740
15,300.00	91.00	330.28	6,657.79	7,851.79	-1,610.34	14,464,402.94	1,728,366.70	39.82840283	-80.68673289
15,400.00	91.00	330.28	6,656.04	7,938.62	-1,659.92	14,464,489.77	1,728,317.13	39.82884176	-80.68690839
15,500.00	91.00	330.28	6,654.28	8,025.45	-1,709.49	14,464,576.60	1,728,267.55	39.82888089	-80.68708388
15,600.00	91.00	330.28	6,652.53	8,112.27	-1,759.07	14,464,663.43	1,728,217.98	39.82911982	-80.68725937
15,700.00	91.00	330.28	6,650.78	8,199.10	-1,808.64	14,464,750.26	1,728,168.41	39.82935855	-80.68743487
15,800.00	91.00	330.28	6,649.02	8,285.93	-1,858.21	14,464,837.09	1,728,118.83	39.82959748	-80.68761036
15,900.00	91.00	330.28	6,647.27	8,372.76	-1,907.79	14,464,923.92	1,728,069.26	39.82983641	-80.68778586
16,000.00	91.00	330.28	6,645.52	8,459.59	-1,957.36	14,465,010.74	1,728,019.69	39.83007534	-80.68796136
16,100.00	91.00	330.28	6,643.77	8,546.42	-2,006.94	14,465,097.57	1,727,970.11	39.83031427	-80.68813686
16,200.00	91.00	330.28	6,642.01	8,633.25	-2,056.51	14,465,184.40	1,727,920.54	39.83055320	-80.68831236
16,300.00	91.00	330.28	6,640.26	8,720.08	-2,106.08	14,465,271.23	1,727,870.96	39.83079212	-80.68848786
16,400.00	91.00	330.28	6,638.51	8,806.91	-2,155.66	14,465,358.06	1,727,821.39	39.83103105	-80.68866336
16,500.00	91.00	330.28	6,636.76	8,893.74	-2,205.23	14,465,444.89	1,727,771.82	39.83126998	-80.68883887
16,600.00	91.00	330.28	6,635.00	8,980.57	-2,254.80	14,465,531.72	1,727,722.24	39.83150891	-80.68901437
16,700.00	91.00	330.28	6,633.25	9,067.40	-2,304.38	14,465,618.55	1,727,672.67	39.83174783	-80.68918988
16,800.00	91.00	330.28	6,631.50	9,154.23	-2,353.95	14,465,705.38	1,727,623.09	39.83198676	-80.68936539
16,900.00	91.00	330.28	6,629.75	9,241.06	-2,403.53	14,465,792.21	1,727,573.52	39.83222569	-80.68954090
17,000.00	91.00	330.28	6,627.99	9,327.89	-2,453.10	14,465,879.04	1,727,523.95	39.83246461	-80.68971641
17,100.00	91.00	330.28	6,626.24	9,414.72	-2,502.67	14,465,965.87	1,727,474.37	39.83270354	-80.68989192
17,200.00	91.00	330.28	6,624.49	9,501.55	-2,552.25	14,466,052.70	1,727,424.80	39.83294247	-80.69006743
17,300.00	91.00	330.28	6,622.73	9,588.38	-2,601.82	14,466,139.53	1,727,375.22	39.83318139	-80.69024295
17,400.00	91.00	330.28	6,620.98	9,675.21	-2,651.40	14,466,226.36	1,727,325.65	39.83342032	-80.69041846
17,500.00	91.00	330.28	6,619.23	9,762.04	-2,700.97	14,466,313.19	1,727,276.08	39.83365924	-80.69059398
17,600.00	91.00	330.28	6,617.48	9,848.86	-2,750.54	14,466,400.02	1,727,226.50	39.83389817	-80.69076950
17,700.00	91.00	330.28	6,615.72	9,935.69	-2,800.12	14,466,486.85	1,727,176.93	39.83413709	-80.69094502
17,800.00	91.00	330.28	6,613.97	10,022.52	-2,849.69	14,466,573.67	1,727,127.35	39.83437601	-80.69112054
17,900.00	91.00	330.28	6,612.22	10,109.35	-2,899.27	14,466,660.50	1,727,077.78	39.83461494	-80.69129606
18,000.00	91.00	330.28	6,610.47	10,196.18	-2,948.84	14,466,747.33	1,727,028.21	39.83485386	-80.69147158
18,100.00	91.00	330.28	6,608.71	10,283.01	-2,998.41	14,466,834.16	1,726,978.63	39.83509278	-80.69164711
18,200.00	91.00	330.28	6,606.96	10,369.84	-3,047.99	14,466,920.99	1,726,929.06	39.83533171	-80.69182263
18,300.00	91.00	330.28	6,605.21	10,456.67	-3,097.56	14,467,007.82	1,726,879.49	39.83557063	-80.69199816
18,311.87	91.00	330.28	6,605.00	10,466.98	-3,103.45	14,467,018.13	1,726,873.60	39.83559899	-80.69201899

PBHL/TD 18311.87 MD/6605.00 TVD

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Office of Oil and Gas
MAR 2 2018
WV Department of
Environmental Protection



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

Wednesday, May 30, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit approval for TEN HIGH 1N-19HM
47-051-02017-00-00

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: TEN HIGH 1N-19HM
Farm Name: LAWRENCE & SHIRLEY CON.
U.S. WELL NUMBER: 47-051-02017-00-00
Horizontal 6A New Drill
Date Issued: 5/30/2018

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Ten High 1N-19HM (R)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1310.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1310.00usft
Site:	Ten High	North Reference:	Grid
Well:	Ten High 1N-19HM (R)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
BHL Ten High 1N-19HM - plan hits target center - Point	0.00	0.00	6,605.00	10,466.98	-3,103.45	14,467,018.13	1,726,873.60	39.83559900	-80.89201900
LP Ten High 1N-19HM 5 - plan hits target center - Point	0.00	0.00	6,787.00	1,450.41	2,044.42	14,458,001.56	1,732,021.47	39.81078727	-80.67379840
LP Ten High 1N-19HM - plan misses target center by 43.74usft at 7903.49usft MD (6787.02 TVD, 1429.29 N, 2056.12 E) - Point	0.00	0.00	6,787.00	1,450.41	2,084.42	14,458,001.56	1,732,071.47	39.81078677	-80.67362035

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 1°/100' build
1,900.00	1,899.68	13.96	0.00	Begin 1°/100' turn
2,173.42	2,172.48	30.80	6.13	Begin 4.00° tangent
3,103.20	3,100.00	80.49	47.82	Begin 3°/100' build/turn
3,639.04	3,622.46	154.19	130.57	Begin 3°/100' build/turn
4,349.57	4,242.16	296.26	438.53	Begin 38.33° tangent
6,937.73	6,272.56	750.33	1,977.97	Begin 10°/100' build/turn
7,927.65	6,787.00	1,450.41	2,044.42	Begin 91.00° lateral section
18,311.87	6,605.00	10,466.98	-3,103.45	PBHL/TD 18311.87 MD/6605.00 TVD

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 MAR 2 2018
 WV Department of
 Environmental Protection

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Ten High 1N-19HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

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

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109186) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1308426)

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 _____

Company Official (Typed Name) Sean Gasser

Company Official Title Engineer

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Office of Oil and Gas

MAR 2 2018

Subscribed and sworn before me this 20 day of February, 2018

[Signature]

Notary Public

My commission expires 8-31-21



06/01/2018

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.20 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: *[Signature]*

Comments: _____

Title: Oil & Gas Inspector

Date: 2/21/18

Field Reviewed? Yes No


RECEIVED
Office of Oil and Gas

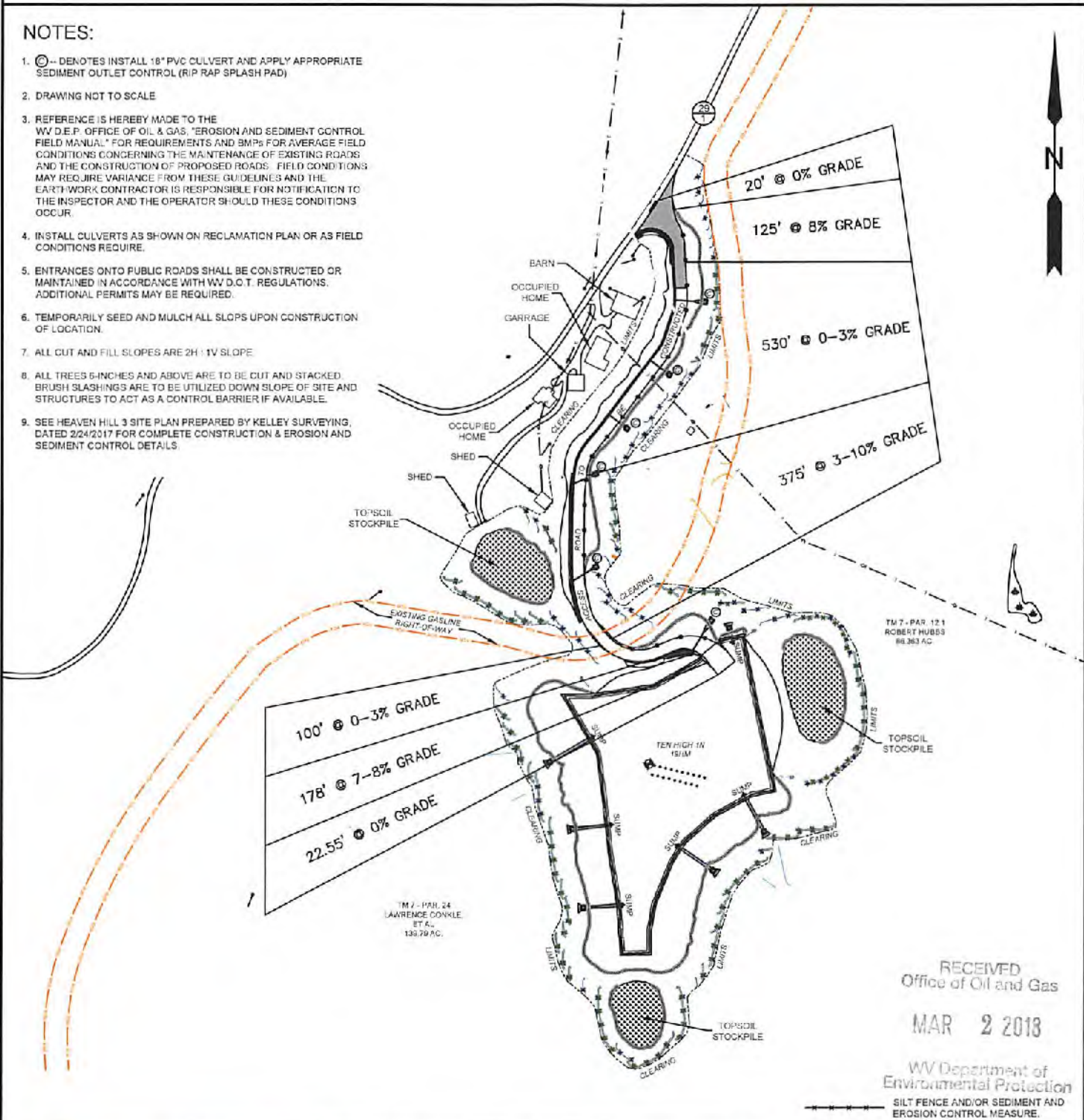
MAR 2 2018

WV Department of
Environmental Protection

PROPOSED TEN HIGH 1N - 19HM

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 HEAVEN HILL 3 SITE PLAN PREPARED BY KELLEY SURVEYING, DATED 2/24/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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MAR 2 2018

WV Department of
Environmental Protection
SILT FENCE AND/OR SEDIMENT AND
EROSION CONTROL MEASURE.



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www.slsurvey.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT		
MARSHALL	MEADE		
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	01-08-18	NONE



**TUG HILL
OPERATING**

06/01/2018



Well Site Safety Plan

Tug Hill Operating, LLC

JK
2/21/18

Well Name: Ten High 1N-19HM

Pad Location: Ten High

Marshall County, West Virginia

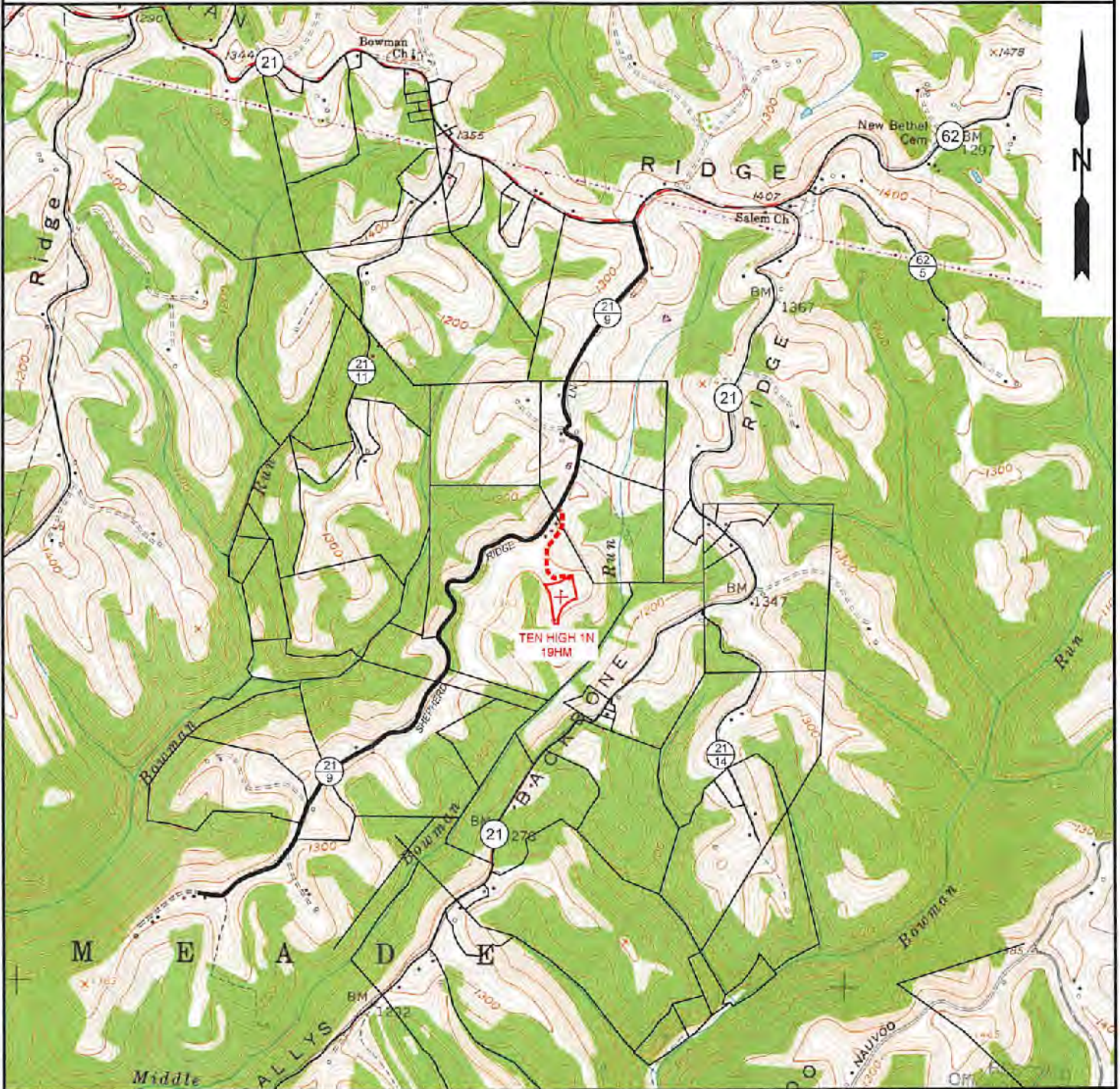
UTM (meters), NAD83, Zone 17:
Northing-4,406,365.60
Easting -527,298.06

February 2018

RECEIVED
Office of Oil and Gas
MAR 2 2018
WV Dept. of Environmental Protection

06/01/2018

PROPOSED TEN HIGH 1N - 19HM



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 51°03'40" W AT 52,970' FROM TEN HIGH 1N - 19HM SURFACE LOCATION

MAR 2 2018

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TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	360 SOUTHPOINTE BLVD	
DRAWN BY		DATE	SCALE
K.G.M.		01-08-18	1" = 2000'

WV Department of Environmental Protection
TUG HILL OPERATING

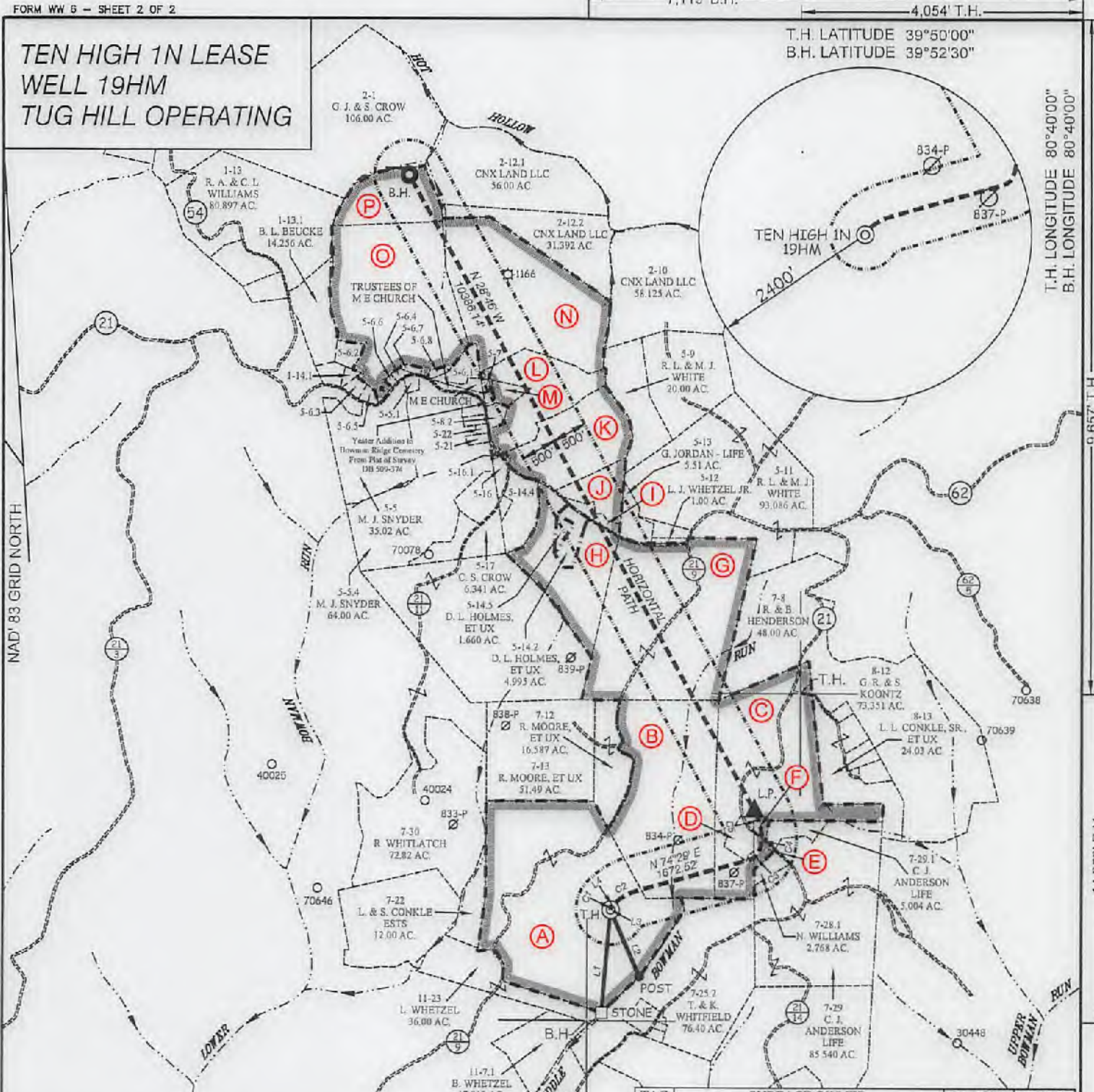
06/01/2018

**TEN HIGH 1N LEASE
WELL 19HM
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°52'30"

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

NAD'83 GRID NORTH



CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	20.08'	29.13'	N 22°49' E	19.68'
C2	383.96'	738.14'	N 60°43' E	379.64'
C3	189.89'	230.36'	N 48°15' E	184.56'
C4	303.27'	499.13'	N 05°51' E	298.63'
C5	294.90'	889.54'	N 19°21' W	293.56'

TAG	SURFACE OWNER	PARCEL	ACRES
A	LAWRENCE & SHIRLEY CONKLE ESTS	9-7-24	139.79
B	ROBERT G. & SCARLETT HUBBS	9-7-12.1	86.363
C	MARK H. FOX	9-7-11	75.37
D	WEST VIRGINIA DEPT. OF HIGHWAYS	9-7-11.1	3.63
E	VICTOR & CLAIRE CAMERON	9-7-28	1.983
F	CAROL J. ANDERSON - LIFE	9-7-27	1.005
G	ROBERT GLENN HUBBS, ET AL	9-7-7	108.61
H	DAVID L. HOLMES, ET UX	9-5-14	37.345
I	SAVANNA N. & MATTHEW WEST	9-5-14.1	2.819
J	MARK H. FOX, ET UX	9-5-14.3	10.714
K	MARK H. FOX, ET UX	9-5-15	36.533
L	SCOTT A. HOSTUTLER	9-5-8	26.752
M	ISAAC LEE MCKINNEY, ET UX	9-5-8.1	2.875
N	HARRY J. CRAWFORD, ET UX - LIFE	9-2-12	168.11
O	NANCY L. SNYDER (LIFE ESTATE)	9-5-6	82.858
P	CNX LAND LLC	9-5-6.9	22.392

LINE	BEARING	DISTANCE
L1	S 05°00' W	1487.08'
L2	S 23°25' E	1047.25'
L3	N 00°57' E	13.97'
L3	N 41°22' E	72.17'

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(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C.(FT) N. 478,167.69 E. 1,636,097.39
 NAD'83 GEO. LAT-(N) 39.808824 LONG-(W) 80.661097
 NAD'83 UTM (M) N. 4,406,365.60 E. 527,298.06
LANDING POINT
 NAD'83 S.P.C.(FT) N. 479,584.2 E. 1,639,766.4
 NAD'83 GEO. LAT-(N) 39.810767 LONG-(W) 80.673799
 NAD'83 UTM (M) N. 4,406,807.7 E. 527,921.2
BOTTOM HOLE
 NAD'83 S.P.C.(FT) N. 488,688.6 E. 1,633,766.3
 NAD'83 GEO. LAT-(N) 39.835599 LONG-(W) 80.692019
 NAD'83 UTM (M) N. 4,409,555.9 E. 526,352.1

GREGORY A. SMITH
LICENSED
No. 677
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

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

P.S. 677 *Gregory A. Smith*

SCALE 1" = 2000' FILE NO. 8656P19HMR.dwg
 DATE JANUARY 19, 20 18
 REVISED FEBRUARY 19, 20 18
 OPERATORS WELL NO. TEN HIGH 1N-19HM
 API WELL NO. 47
 NO. STATE COUNTY PERMIT

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

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE WW-8A1)

06/01/2018

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

**TEN HIGH 1N LEASE
WELL 19HM
TUG HILL OPERATING**

7,119' B.H. 4,054' T.H.

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°52'30"

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

9,657' T.H.

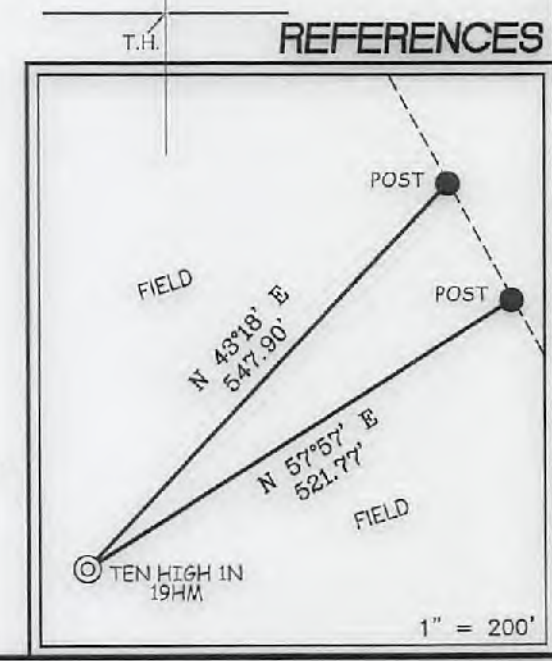
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C.(FT)	N. 478,167.89	E. 1,836,697.36
NAD'83 GEO.	LAT-(N) 39.806824	LONG-(W) 80.881097
NAD'83 UTM (M)	N. 4,406,365.60	E. 527,298.06
LANDING POINT		
NAD'83 S.P.C.(FT)	N. 479,584.2	E. 1,838,766.4
NAD'83 GEO.	LAT-(N) 39.810767	LONG-(W) 80.873798
NAD'83 UTM (M)	N. 4,406,807.7	E. 527,921.2
BOTTOM HOLE		
NAD'83 S.P.C.(FT)	N. 488,688.6	E. 1,833,768.3
NAD'83 GEO.	LAT-(N) 39.835599	LONG-(W) 80.692019
NAD'83 UTM (M)	N. 4,409,555.9	E. 526,352.1

MAP/PARCEL	ADJOINING SURFACE OWNER LIST (SEE SHEET 2)	ACRES
9-1-14.1	ALICE J. & DOUGLAS J. MARTIN	0.905
9-5-1.1	DAVID M. TOLER, ET UX	0.985
9-5-5.1	JON B. CRAWFORD	4.679
9-5-6.2	MICHAEL JOSEPH SNYDER	2.82
9-5-6.3	DEUTSCHE BANK NATIONAL TRUST CO.	1.391
9-5-6.4	NANCY L. SNYDER	0.094
9-5-6.5	LINDA GORBY DELBERT	1.087
9-5-6.6	NANCY L. SNYDER	0.420
9-5-6.7	NANCY L. SNYDER	0.678
9-5-6.8	NANCY L. SNYDER	0.691
9-5-7	M E CHURCH	81.5 POLES 6 AC. (ASSD)
9-5-8.2	MISTY CROW WITH ROBERT & ELSIE WHETZEL (LIFE ESTATE)	1.973
9-5-14.4	BETTY R. OTT	10.501
9-5-16	LARRY L. CONKLE, JR.	2.365
9-5-16.1	SCOTT A. HOSTUTLER	0.142
9-5-21	RALPH E. WELLMAN, ET UX	1.00
9-5-22	RALPH E. WELLMAN, ET UX	0.5

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 & TOPD MARK SCALE IS 1"=2000'



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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. 677 Gregory A. Smith



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE JANUARY 19, 20 18
 REVISED FEBRUARY 19, 20 18
 OPERATORS WELL NO. TEN HIGH 1N-19HM
 API WELL NO. 47 - 051 - 02017 **H6A**
 STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8655P19HMR.dwg
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

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

LOCATION: GROUND = 1,321.20' ELEVATION PROPOSED = 1,310.08' WATERSHED MIDDLE BOWMAN RUN OF FISH CREEK (HUC 10)
 DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'

SURFACE OWNER LAWRENCE & SHIRLEY CONKLE ESTS ACREAGE 139.79±
 ROYALTY OWNER ANDY PAUL & JACKIE KUHN, ET AL - WW-6A1 ACREAGE 139.79±

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

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH TVD: 6,865' / TMD: 18,312'

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 MARSHALL
 PERMIT 06/01/2018

Lease No.	Tag	Parcel	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15664	A	9-7-24	THERESA ANNE HUGHES	CHEVRON USA INC	1/8+	863 343	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	A	9-7-24	BRENDA J WHETZEL	CHEVRON USA INC	1/8+	863 635	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15662	A	9-7-24	LARRY LEE CONKLE	CHEVRON U.S.A. INC.	1/8+	863 354	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	A	9-7-24	ROY A CONKLE SR AND LORIE A CONKLE	CHEVRON USA INC	1/8+	863 311	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15501	B	9-7-12.1	RONALD AND EDNA MOORE	TRIENERGY INC	1/8+	661 449	TriEnergy to AB Resources: 20/252	AB Resources to Chevron: 756/379	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*47051.094.0	C	9-7-11	MARK H FOX	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127
10*19117	C	9-7-11	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127
	C	9-7-11	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*19565	D	9-7-11.1	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	947 566	N/A	N/A	N/A	N/A	N/A
10*19143	E	9-7-28	VICTOR CAMERON CLAIRE CAMERON	CHEVRON USA INC	1/8+	872 171	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 40/127
	E	9-7-28	SWALLEN JEFFREY WARNER ET UX	CHEVRON USA INC	1/8+	880 533	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	CLANTON ELEANORA K	CHEVRON USA INC	1/8+	884 39	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WAYSON DOUGLAS ANTHONY	CHEVRON USA INC	1/8+	886 542	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	BISHOP SARAH L	CHEVRON USA INC	1/8+	885 557	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	HARRIS WALTER DAVIS ET UX	CHEVRON USA INC	1/8+	880 530	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WINTER JAMES A ET UX	CHEVRON USA INC	1/8+	884 30	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WINTER JOHN C ET UX	CHEVRON USA INC	1/8+	885 554	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WAYSON DAWNNETTA MARIE	CHEVRON USA INC	1/8+	886 548	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER KATHLEEN AUTRY	CHEVRON USA INC	1/8+	884 33	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	DEBOLD MARJOLEA	CHEVRON USA INC	1/8+	880 527	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GUMP MORGAN C	CHEVRON USA INC	1/8+	885 503	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	REESE GEORGETTE	CHEVRON USA INC	1/8+	882 317	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	ICARD JOHN PAUL RICHMOND	CHEVRON USA INC	1/8+	882 481	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER FREDERICK A ET UX	CHEVRON USA INC	1/8+	884 36	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	DURRAH LEIGH ANN	CHEVRON USA INC	1/8+	885 500	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER JOHN D	CHEVRON USA INC	1/8+	884 40	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN CHRISTOPHER C	CHEVRON USA INC	1/8+	882 487	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN JONATHAN A	CHEVRON USA INC	1/8+	882 323	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	BOONE JESSE D JR ET UX	CHEVRON USA INC	1/8+	882 484	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GUMP DAVID A	CHEVRON USA INC	1/8+	886 513	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN TIMOTHY C	CHEVRON USA INC	1/8+	887 579	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SMITH ROBERT D ET UX	CHEVRON USA INC	1/8+	882 320	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GRIMM COLE DALE	CHEVRON USA INC	1/8+	886 545	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GRIGSBY WALTER G ET UX	CHEVRON USA INC	1/8+	882 314	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
10*19135	F	9-7-27	CAROL J ANDERSON WILLIAM ROBERT ANDERSON	CHEVRON USA INC	1/8+	772 226	N/A	N/A	N/A	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN JEFFREY WARNER ET UX	CHEVRON USA INC	1/8+	880 533	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	CLANTON ELEANORA K	CHEVRON USA INC	1/8+	884 39	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WAYSON DOUGLAS ANTHONY	CHEVRON USA INC	1/8+	886 542	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	BISHOP SARAH L	CHEVRON USA INC	1/8+	885 557	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	HARRIS WALTER DAVIS ET UX	CHEVRON USA INC	1/8+	880 530	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WINTER JAMES A ET UX	CHEVRON USA INC	1/8+	884 30	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WINTER JOHN C ET UX	CHEVRON USA INC	1/8+	885 554	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WAYSON DAWNNETTA MARIE	CHEVRON USA INC	1/8+	886 548	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER KATHLEEN AUTRY	CHEVRON USA INC	1/8+	884 33	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	DEBOLD MARJOLEA	CHEVRON USA INC	1/8+	880 527	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GUMP MORGAN C	CHEVRON USA INC	1/8+	885 503	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	REESE GEORGETTE	CHEVRON USA INC	1/8+	882 317	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	ICARD JOHN PAUL RICHMOND	CHEVRON USA INC	1/8+	882 481	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER FREDERICK A ET UX	CHEVRON USA INC	1/8+	884 36	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	DURRAH LEIGH ANN	CHEVRON USA INC	1/8+	885 500	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER JOHN D	CHEVRON USA INC	1/8+	884 40	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN CHRISTOPHER C	CHEVRON USA INC	1/8+	882 487	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN JONATHAN A	CHEVRON USA INC	1/8+	882 323	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	BOONE JESSE D JR ET UX	CHEVRON USA INC	1/8+	882 484	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GUMP DAVID A	CHEVRON USA INC	1/8+	886 513	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409

Lease No.	Tag	Parcel	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment
	F	9-7-27	SWALLEN TIMOTHY C	CHEVRON USA INC	1/8+	887	579	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SMITH ROBERT D ET UX	CHEVRON USA INC	1/8+	882	320	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GRIMM COLE DALE	CHEVRON USA INC	1/8+	886	545	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GRIGSBY WALTER G ET UX	CHEVRON USA INC	1/8+	882	314	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
10*19031	G	9-7-7	ROBERT G HUBBS SCARLETT E OTTE HUBBS	CHIEF EXPLORATION & DEVELOPMENT	1/8+	677	521	N/A	N/A	Chief Expl. to Chevron: 25/1	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 960/409
10*47051.075.0	H	9-5-14	DAVID L HOLMES AND TERRI L HOLMES	TH EXPLORATION LLC	1/8+	869	204	N/A	N/A	N/A	N/A	N/A
10*19118	H	9-5-14	DAVID L HOLMES AND TERRI L HOLMES	TH EXPLORATION LLC	1/8+	869	204	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
	I	9-5-14.1	WEST SAVANNAH N ET VIR	TH EXPLORATION LLC	1/8+	876	98	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 960/409
10*19005	J	9-5-14.3	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TRIENERGY HOLDINGS, LLC	1/8+	687	598	N/A	TriEnergy Holdings to NPAR: 23/74	NPAR to Chevron: 756/332	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*19005	K	9-5-15	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TRIENERGY HOLDINGS, LLC	1/8+	687	598	N/A	TriEnergy Holdings to NPAR: 23/74	NPAR to Chevron: 756/332	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*19206	L	9-5-8	SCOTT A HUSTUTLER	TRIENERGY HOLDINGS, LLC	1/8+	724	208	TriEnergy Holdings to NPAR: 25/463	NPAR to Chevron: 26/269	NPAR to Chevron: 756/307	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
	M	9-5-8.1	MCKINNEY ISAAC L ET UX	TRIENERGY HOLDINGS LLC	1/8+	701	472	N/A	N/A	TriEnergy to NPAR: 24/180	NPAR to Chevron: 756/332	Chevron to Tug Hill: 960/409
	N	9-2-12	CRAWFORD HARRY ET AL	TRIENERGY INC	1/8+	661	156	TriEnergy to AB Resources: 20/252	TriEnergy to TriEnergy Holdings: 21/148	AB Resources to Chevron: 756/397	TriEnergy Holdings to Chevron: 28/356	Chevron to Tug Hill: 960/409
	O	9-5-6	NANCY L. SNYDER	CHEVRON USA INC	1/8+	865	191	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	O	9-5-6	DAKAN JOSEPH D	CHESAPEAKE APPALACHIA LLC	1/8+	694	71	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	O	9-5-6	RAJU PATSY JO AKA GORBY PATSY JO	CHESAPEAKE APPALACHIA LLC	1/8+	695	175	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	P	9-5-6.9	DAKAN JOSEPH D	CHESAPEAKE APPALACHIA LLC	1/8+	694	71	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	P	9-5-6.9	RAJU PATSY JO AKA GORBY PATSY JO	CHESAPEAKE APPALACHIA LLC	1/8+	695	175	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409

Lease No.	Tag	Parcel	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment	Assignment	Assignment
10*15664	A	9-7-24	THERESA ANNE HUGHES	CHEVRON USA INC	1/8+	863 343	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15666	A	9-7-24	BRENDA J WHETZEL	CHEVRON USA INC	1/8+	863 635	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15662	A	9-7-24	LARRY LEE CONKLE	CHEVRON U.S.A. INC.	1/8+	863 354	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15663	A	9-7-24	ROY A CONKLE SR AND LORIE A CONKLE	CHEVRON USA INC	1/8+	863 311	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 36/148
10*15501	B	9-7-12.1	RONALD AND EDNA MOORE	TRIENERGY INC	1/8+	661 449	TriEnergy to AB Resources: 20/252	AB Resources to Chevron: 756/379	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*47051.094.0	C	9-7-11	MARK H FOX	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127
10*19117	C	9-7-11	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127
	C	9-7-11	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TH EXPLORATION LLC	1/8+	864 163	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127
10*19565	D	9-7-11.1	WEST VIRGINIA DEPARTMENT OF TRANSPORTATION, DIVISION OF HIGHWAYS	TH EXPLORATION LLC	1/8+	947 566	N/A	N/A	N/A	N/A	N/A
10*19143	E	9-7-28	VICTOR CAMERON CLAIRE CAMERON	CHEVRON USA INC	1/8+	872 171	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 40/127
	E	9-7-28	SWALLEN JEFFREY WARNER ET UX	CHEVRON USA INC	1/8+	880 533	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	CLANTON ELEANORA K	CHEVRON USA INC	1/8+	884 39	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WAYSON DOUGLAS ANTHONY	CHEVRON USA INC	1/8+	886 542	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	BISHOP SARAH L	CHEVRON USA INC	1/8+	885 557	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	HARRIS WALTER DAVIS ET UX	CHEVRON USA INC	1/8+	880 530	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WINTER JAMES A ET UX	CHEVRON USA INC	1/8+	884 30	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WINTER JOHN C ET UX	CHEVRON USA INC	1/8+	885 554	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	WAYSON DAWNETTA MARIE	CHEVRON USA INC	1/8+	886 548	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER KATHLEEN AUTRY	CHEVRON USA INC	1/8+	884 33	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	DEBOLD MARIOLEA	CHEVRON USA INC	1/8+	880 527	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GUMP MORGAN C	CHEVRON USA INC	1/8+	885 503	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	REESE GEORGETTE	CHEVRON USA INC	1/8+	882 317	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	ICARD JOHN PAUL RICHMOND	CHEVRON USA INC	1/8+	882 481	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER FREDERICK A ET UX	CHEVRON USA INC	1/8+	884 36	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	DURRAH LEIGH ANN	CHEVRON USA INC	1/8+	885 500	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	KOESTER JOHN D	CHEVRON USA INC	1/8+	884 40	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN CHRISTOPHER C	CHEVRON USA INC	1/8+	882 487	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN JONATHAN A	CHEVRON USA INC	1/8+	882 323	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	BOONE JESSE D JR ET UX	CHEVRON USA INC	1/8+	882 484	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GUMP DAVID A	CHEVRON USA INC	1/8+	886 513	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SWALLEN TIMOTHY C	CHEVRON USA INC	1/8+	887 579	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	SMITH ROBERT D ET UX	CHEVRON USA INC	1/8+	882 320	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GRIMM COLE DALE	CHEVRON USA INC	1/8+	886 545	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	E	9-7-28	GRIGSBY WALTER G ET UX	CHEVRON USA INC	1/8+	882 314	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
10*19135	F	9-7-27	CAROL J ANDERSON WILLIAM ROBERT ANDERSON	CHEVRON USA INC	1/8+	772 226	N/A	N/A	N/A	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN JEFFREY WARNER ET UX	CHEVRON USA INC	1/8+	880 533	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	CLANTON ELEANORA K	CHEVRON USA INC	1/8+	884 39	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WAYSON DOUGLAS ANTHONY	CHEVRON USA INC	1/8+	886 542	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	BISHOP SARAH L	CHEVRON USA INC	1/8+	885 557	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	HARRIS WALTER DAVIS ET UX	CHEVRON USA INC	1/8+	880 530	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WINTER JAMES A ET UX	CHEVRON USA INC	1/8+	884 30	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WINTER JOHN C ET UX	CHEVRON USA INC	1/8+	885 554	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	WAYSON DAWNETTA MARIE	CHEVRON USA INC	1/8+	886 548	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER KATHLEEN AUTRY	CHEVRON USA INC	1/8+	884 33	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	DEBOLD MARIOLEA	CHEVRON USA INC	1/8+	880 527	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GUMP MORGAN C	CHEVRON USA INC	1/8+	885 503	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	REESE GEORGETTE	CHEVRON USA INC	1/8+	882 317	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	ICARD JOHN PAUL RICHMOND	CHEVRON USA INC	1/8+	882 481	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER FREDERICK A ET UX	CHEVRON USA INC	1/8+	884 36	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	DURRAH LEIGH ANN	CHEVRON USA INC	1/8+	885 500	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	KOESTER JOHN D	CHEVRON USA INC	1/8+	884 40	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN CHRISTOPHER C	CHEVRON USA INC	1/8+	882 487	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SWALLEN JONATHAN A	CHEVRON USA INC	1/8+	882 323	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	BOONE JESSE D JR ET UX	CHEVRON USA INC	1/8+	882 484	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GUMP DAVID A	CHEVRON USA INC	1/8+	886 513	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409

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	F	9-7-27	SWALLEN TIMOTHY C	CHEVRON USA INC	1/8+	887 579	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	SMITH ROBERT D ET UX	CHEVRON USA INC	1/8+	882 320	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GRIMM COLE DALE	CHEVRON USA INC	1/8+	886 545	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	F	9-7-27	GRIGSBY WALTER G ET UX	CHEVRON USA INC	1/8+	882 314	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
10*19031	G	9-7-7	ROBERT G HUBBS SCARLETT E OTTE HUBBS	CHIEF EXPLORATION & DEVELOPMENT	1/8+	677 521	N/A	N/A	Chief Expl. to Chevron: 25/1	Chevron to Tug Hill: 36/148	Chevron to Tug Hill: 960/409
10*47051.075.0	H	9-5-14	DAVID L HOLMES AND TERRI L HOLMES	TH EXPLORATION LLC	1/8+	869 204	N/A	N/A	N/A	N/A	N/A
10*19118	H	9-5-14	DAVID L HOLMES AND TERRI L HOLMES	TH EXPLORATION LLC	1/8+	869 204	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
	I	9-5-14.1	WEST SAVANNAH N ET VIR	TH EXPLORATION LLC	1/8+	876 98	N/A	N/A	N/A	Tug Hill to Chevron: 36/168	Chevron to Tug Hill: 960/409
10*19005	J	9-5-14.3	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TRIENERGY HOLDINGS, LLC	1/8+	687 598	N/A	TriEnergy Holdings to NPAR: 23/74	NPAR to Chevron: 756/332	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*19005	K	9-5-15	MARK H. FOX AND RETTA J. FOX, HIS WIFE	TRIENERGY HOLDINGS, LLC	1/8+	687 598	N/A	TriEnergy Holdings to NPAR: 23/74	NPAR to Chevron: 756/332	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
10*19206	L	9-5-8	SCOTT A HUSTUTLER	TRIENERGY HOLDINGS, LLC	1/8+	724 208	TriEnergy Holdings to NPAR: 25/463	NPAR to Chevron: 26/269	NPAR to Chevron: 756/307	Chevron to Tug Hill: 40/127	Chevron to Tug Hill: 960/409
	M	9-5-8.1	MCKINNEY ISAAC L ET UX	TRIENERGY HOLDINGS LLC	1/8+	701 472	N/A	N/A	TriEnergy to NPAR: 24/180	NPAR to Chevron: 756/332	Chevron to Tug Hill: 960/409
	N	9-2-12	CRAWFORD HARRY ET AL	TRIENERGY INC	1/8+	661 156	TriEnergy to AB Resources: 20/252	TriEnergy to TriEnergy Holdings: 21/148	AB Resources to Chevron: 756/397	TriEnergy Holdings to Chevron: 28/356	Chevron to Tug Hill: 960/409
	O	9-5-6	NANCY L. SNYDER	CHEVRON USA INC	1/8+	865 191	N/A	N/A	N/A	N/A	Chevron to Tug Hill: 960/409
	O	9-5-6	DAKAN JOSEPH D	CHESAPEAKE APPALACHIA LLC	1/8+	694 71	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	O	9-5-6	RAJU PATSY JO AKA GORBY PATSY JO	CHESAPEAKE APPALACHIA LLC	1/8+	695 175	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	P	9-5-6.9	DAKAN JOSEPH D	CHESAPEAKE APPALACHIA LLC	1/8+	694 71	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409
	P	9-5-6.9	RAJU PATSY JO AKA GORBY PATSY JO	CHESAPEAKE APPALACHIA LLC	1/8+	695 175	N/A	N/A	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 960/409

WW-6A1
(5/13)

Operator's Well No. Ten High 1N-19HM

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

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

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

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

*See attached pages

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

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

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

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

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



February 28, 2018

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

RE: Ten High 1N-19HM

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 21/9 and 21/11 in the area reflected on the Ten High 1N-19HM well plat. THO has conducted a full title search in the relevant Court House to confirm its' ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

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

Amy L. Miller
Permit Specialist – Appalachia

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WV Department of
Environmental Protection

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Post
MARSHALL County 12:43:01 PM
Instrument No 1404376
Date Recorded 05/20/2016
Document Type ASB
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$9.00

ASSIGNMENT AND CONVEYANCE

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

WITNESSETH:

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

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

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

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

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

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

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WV Department of
Environmental Protection

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for now

MEMORANDUM OF AGREEMENT

This Memorandum of Agreement is entered into this 14th day of February, 2018, between **TUG HILL OPERATING, LLC (THQ)**, a Texas limited liability company, whose address is 1320 S. University Blvd., Suite 500, Fort Worth, TX 76107 and **CHEVRON U.S.A., INC. (Chevron)**, a Pennsylvania corporation, whose address is 700 Cherrington Parkway, Coraopolis, PA 15108.

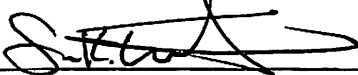
PARTIES AND AGREEMENT REFERENCE: THQ and Chevron entered into a letter agreement ("Letter Agreement") dated February 14th, 2018 (the "Commencement Date") outlining pursuit of definitive agreements to allow THQ the right to permit, drill, extract, produce and market oil and gas from those certain oil and gas interests controlled by Chevron in the Meade District of Marshall County, West Virginia, as more fully described in Exhibit A attached hereto, made a part hereof, and incorporated herein by reference.

1. **TERM:** The rights granted in the Letter Agreement will terminate upon the earlier of (i) one hundred eighty (180) days from the Commencement Date, (ii) Chevron's revocation of the rights granted in the Letter Agreement, or (iii) the parties entering into the definitive agreement described in the Letter Agreement. Upon termination of the Letter Agreement under subsection (i) or (ii) of the immediately preceding sentence, THQ will record a surrender of this Memorandum and withdraw any related well work permit requests.

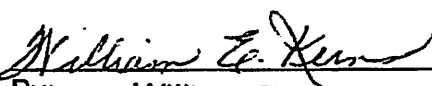
2. **MEMORANDUM FOR RECORDING PURPOSES ONLY:** This Memorandum is for recording purposes only and does not supplement or supersede the parties' respective rights set forth in the Letter Agreement or other agreements.

IN WITNESS WHEREOF, the parties have signed their names hereto as of the date first above written.

Tug Hill Operating, LLC


By: Sean Willis
Its: VP, Engineering &
Development Manager – Appalachia

Chevron U.S.A., Inc.


By: William E. Kerns
Its: Attorney-in-Fact

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Marshall County
Jan Pest, Clerk
Instrument 1437069
02/27/2018 @ 03:43:58 PM
AGREEMENT
Book 961 @ Page 303
Pages Recorded 8
Recording Cost \$ 14.00

Marshall County
Jan Pest, Clerk
Instrument 1436705
02/16/2018 @ 02:16:57 PM
AGREEMENT
Book 960 @ Page 409
Pages Recorded 2
Recording Cost \$ 11.00

06/01/2018

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

Date of Notice Certification: 02/27/2018

API No. 47- 051 - _____
Operator's Well No. Ten High 1N-19HM
Well Pad Name: Ten High

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>527,298.06</u>
County:	<u>Marshall</u>		Northing:	<u>4,406,365.60</u>
District:	<u>Meade</u>	Public Road Access:	<u>Shepherd Ridge Lane (Co. Rt. 21/9)</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>LAWRENCE & SHIRLEY CONKLE, ESTS</u>	
Watershed:	<u>(HUC 10) Fish Creek</u>			

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

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p>OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p> <p align="right">RECEIVED Office of Oil and Gas MAR 2 2018</p>
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Required Attachments:

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

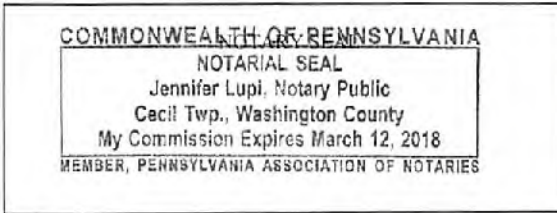
WW-6AC
(1/12)

Certification of Notice is hereby given:

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

Well Operator: Tug Hill Operating, LLC
By: Amy L. Miller *Amy Miller*
Its: Permitting Specialist - Appalachia
Telephone: 724-749-8388

Address: 360 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amiller@tug-hill.com



Subscribed and sworn before me this 28th day of Feb 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

Oil and Gas Privacy Notice:

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

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WW-6A
(9-13)

API NO. 47- 051 - 02017
OPERATOR WELL NO. Ten High 1N-19HM
Well Pad Name: Ten High

**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: 2/26/2018 **Date Permit Application Filed:** 2/27/2018

Notice of:

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

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

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

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

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

SURFACE OWNER(s)
Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle ✓
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A. ✓
Address: 75 Arlington Avenue
Moundsville, WV 26041 *See Attached*

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Robert G. Hubbs and Scarlett E. Otte ✓
Address: 132 Shepherds Ridge Lane
Glen Easton, WV 26039

Name: None
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: None
Address: _____

COAL OWNER OR LESSEE
Name: Murray Energy Corporation ✓
Address: 46226 National Road
St. Clairsville, OH 43950

COAL OPERATOR
Name: Same as above coal owner
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: *See supplement page 1A attached
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: None
Address: _____

*Please attach additional forms if necessary

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WV Department of
Environmental Protection

06/01/2018

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. Ten High 1N-19HM
Well Pad Name: Ten High

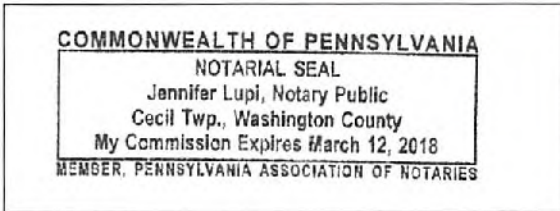
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8386
Email: amiller@tug-hillop.com *any hills*

Address: 330 Southeppointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

Oil and Gas Privacy Notice:

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



Subscribed and sworn before me this 26th day of Feb., 2018.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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06/01/2018

WW-6A Notice of Application Attachment 1 of 1

Surface Owner(s):

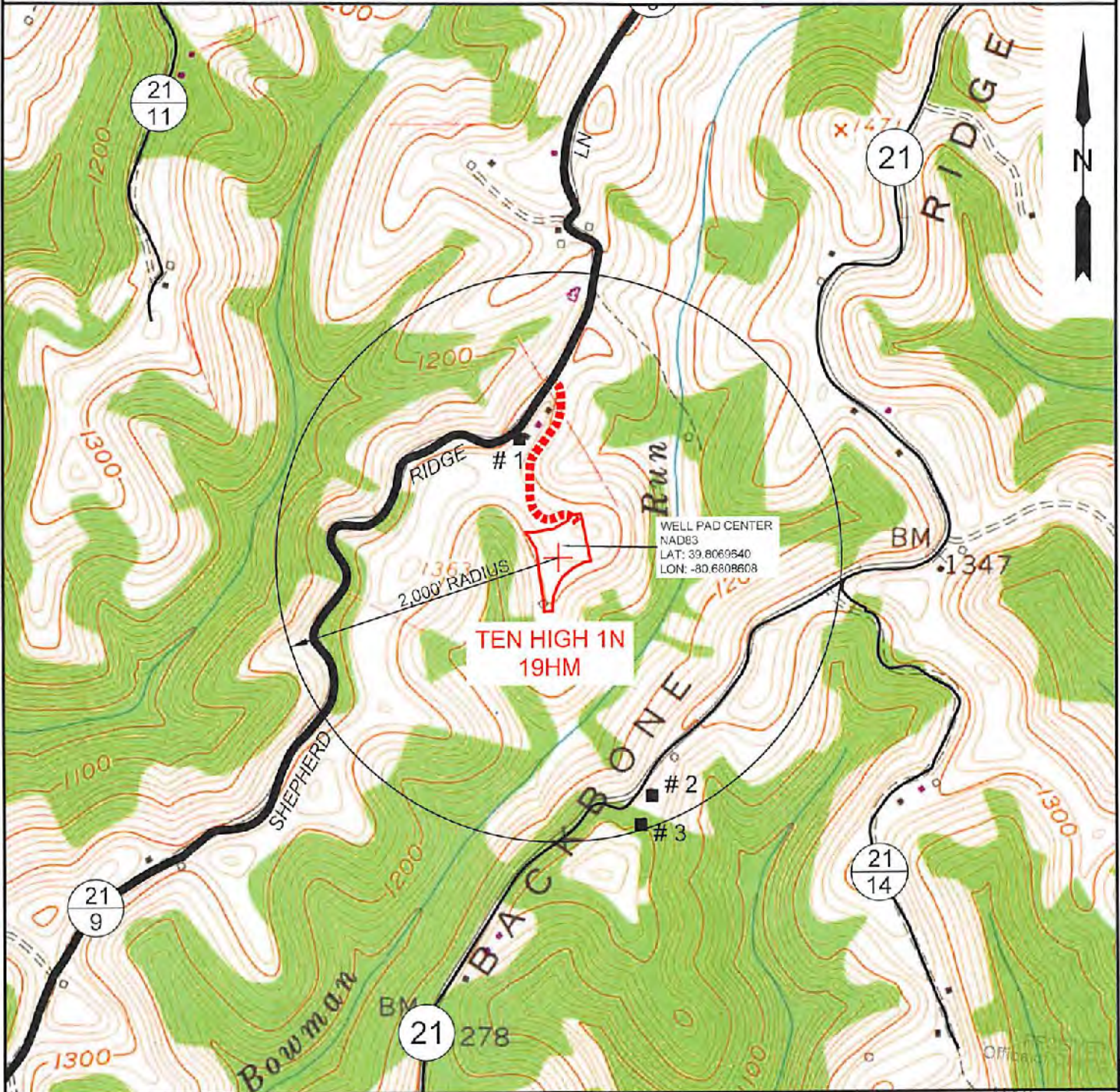
Name: Teresa Anne Hughes and Michael J. /
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel /
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D. /
154 Conkle Drive
Glen Easton, WV 26039

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PROPOSED TEN HIGH 1N - 19HM



NOTE: THERE APPEARS TO BE THREE (3) POSSIBLE WATER SOURCES WITHIN 2,000'.

MAR 2 2018

WV Department of Environmental Protection

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-8834
www.slsurveyors.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8655	01-08-18	1" = 1000'

TUG HILL
OPERATING

06/01/2018

Exhibit WW-6A

Supplement Pg. 1A

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

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

Well: Ten High 1N – 19HM
District: Meade (House #'s 1-3)
State: WV

There are three (3) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

House 1 TM 7 Pcl. 24 Lawrence & Shirley Conkle Ests ✓ Phone: 304-845-1808; 304-848-1808 Physical Address: 77B Shepards Lane 932 Shepherd Ridge Ln. Glen Easton, WV 26039 Tax Address: 75 Arlington Ave. Moundsville, WV 26041	House 2 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield ✓ Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1834 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: 1838 Sallys Backbone Rd. Glen Easton, WV 26039	House 3 TM 7 Pcl. 25 Thomas R. & Kimberly Whitfield ✓ Phone: 304-843-1753 Physical Address: 53 Sallys Backbone Rd. 1838 Sally's Backbone Rd. Glen Easton, WV 26039 Tax Address: Same
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06/01/2018

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: November 29, 2017 **Date of Planned Entry:** 12/6/2017

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: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle ✓
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A. ✓
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Larry Lee Conkle and Donna D. ✓
Address: 154 Conkle Drive
Glen Easton, WV 26039 *See Attached

COAL OWNER OR LESSEE

Name: Murray Energy Corporation ✓
Address: 46226 National Road
St. Clairsville, OH 43950 *See Attached

MINERAL OWNER(S)

Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle ✓
Address: 75 Arlington Avenue
Glen Easton, WV 26039 *See Attached

*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>LAT 39.8067775 LONG -80.6809192</u>
County: <u>MARSHALL</u>	Public Road Access: <u>SHEPHERD RIDGE LANE (Co. RT. 216)</u>
District: <u>MEADE</u>	Watershed: <u>HUC-10 FISH CREEK</u>
Quadrangle: <u>GLEN EASTON 7.5'</u>	Generally used farm name: <u>LAWRENCE & SHIRLEY CONKLE, ESTS</u>

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

Notice is hereby given by:

Well Operator: TUG HILL OPERATING, LLC

Telephone: 724-749-8388

Email: amiller@tug-hill-op.com

Address: 380 SOUTHPOINTE BLVD, SOUTHPOINTE PLAZA II SUITE 200
CANONSBURG, PA 15317

Facsimile: 724-338-2030

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SUITE 200
MAR 2 2018
WV Department of
Environmental Protection

Oil and Gas Privacy Notice:

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

06/01/2018

WW-6A3 Notice of Entry for Plat Survey Attachment 1 of 1

Surface Owner(s):

Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel /
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Robert G. Hubbs and Scarlett E. Otte /
132 Shepherds Ridge Lane
Glen Easton, WV 26039

Mineral Owner(s):

Name: Roy A. Conkle, Sr. and Lorie A. /
75 Arlington Avenue
Moundsville, WV 26041

Larry Lee Conkle and Donna D. /
154 Conkle Drive
Glen Easton, WV 26039

Teresa Anne Hughes and Michael J. /
252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel /
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

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WW-6A5
(1/12)Operator Well No. Ten High 1N-19HM

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: 02/26/2018 **Date Permit Application Filed:** 02/27/2018

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

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

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

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

Name: Estate of Lawrence & Shirley Mae Conkle c/o Roy Conkle
Address: 75 Arlington Avenue
Moundsville, WV 26041

Name: Roy A. Conkle, Sr., and Lorie A.
Address: 75 Arlington Avenue
Moundsville, WV 26041 ****See Attached****

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State: <u>West Virginia</u>	UTM NAD 83	Easting: <u>527,298.06</u>
County: <u>Marshall</u>		Northing: <u>4,406,365.60</u>
District: <u>Meade</u>	Public Road Access: <u>Shepherd Ridge Lane (Co. Rt. 21/8)</u>	
Quadrangle: <u>Glenn Easton 7.6'</u>	Generally used farm name: <u>LAWRENCE & SHIRLEY CONKLE, ESTS</u>	
Watershed: <u>(HUC 10) Fish Creek</u>		

This Notice Shall Include:

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

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

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-336-2030

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

Office of Oil and Gas
MAR 2 2018
WV Department of
Environmental Protection

06/01/2018

WW-6A5 Notice of Planned Operation..... Attachment 1 of 1

Surface Owner(s):

Name: Teresa Anne Hughes and Michael J.
Address: 252 Conkle Drive
Glen Easton, WV 26039

Brenda Joyce Whetzel
1863 Shepherds Ridge Lane
Glen Easton, WV 26039

Larry Lee Conkle and Donna D.
154 Conkle Drive
Glen Easton, WV 26039

Robert G. Hubbs and Scarlett E. Otte
132 Shepherds Ridge Lane
Glen Easton, WV 26039



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

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

Jim Justice
 Governor

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

December 7, 2017

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 Ten High 1N Pad, Marshall County
 Ten High 1N Unit-19HM Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2017-0127 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/9 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

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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Ten High 1N-19HM

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

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